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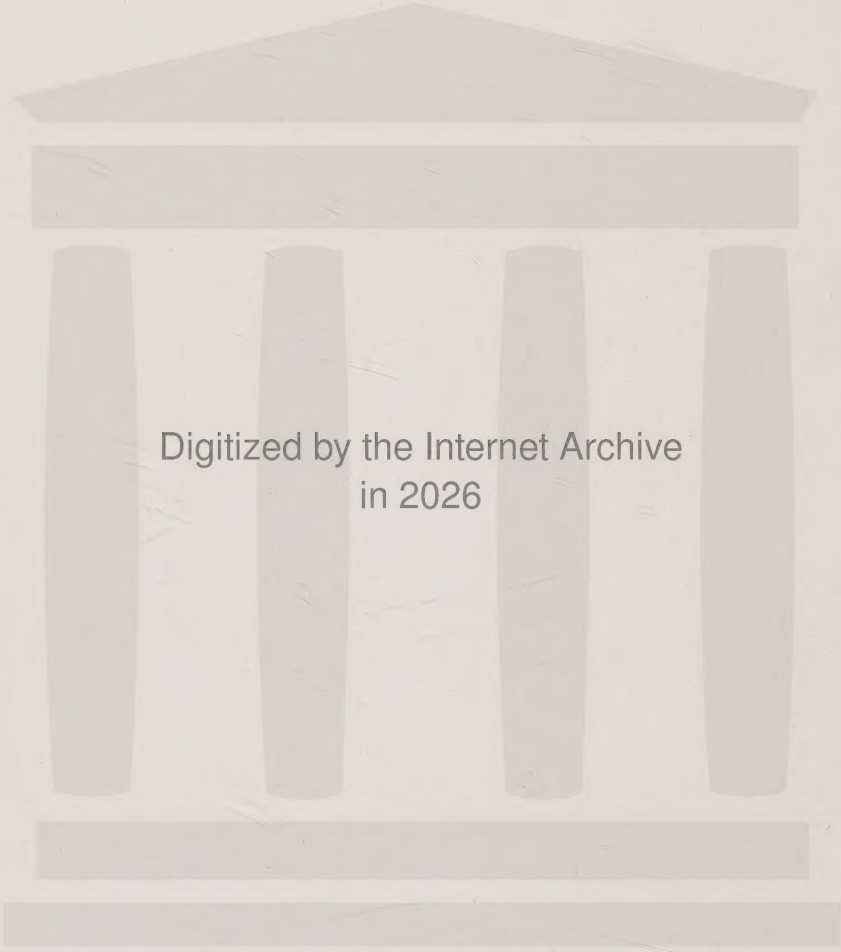
A HISTORY OF ARCHITECTURE



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240—Arch of Trajan at Benevento (Campania). (From photo.)

A HISTORY OF ARCHITECTURE

BY

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PREFACE

THE history of architecture would be wholly a record and examination of the monuments, or of a certain selected number of them, if men had been less wasteful of their inheritance. A little patience, a little consideration, a little sense of what makes up permanent value as compared with trivial changes of fashion, and much of the building of former ages would have been found to fit the requirements of a new age, and a frightful waste of the world's wealth would have been spared.

Of all the buildings treated in this first volume, the Pantheon alone is still in use for purposes akin to those for which it was built. A few memorial buildings, also, are nearly intact. Most of the structures dealt with are in hopeless ruin. Very many of them are known only by slight traces, and only since the accumulated rubbish of ages or the silt of rivers has been removed by the explorers of very recent years.

Under these conditions, only in part can such a volume as this be thought a history "from the monuments." In part it must needs be a history of the opinions as to the monuments, of many succeeding explorers and critical students. It is the business of a student of art and not of other men to write a history "from the monuments"; but in face of the problems connected with these half ruined or wholly destroyed buildings there must be sought the help of the reader of inscriptions, the decipherer of hieroglyphs and arrow-head characters, the student of comparative chronology, the practised and judicious reader of the books left us from antiquity, the curious searcher among vestiges of by-gone beliefs and superstitions. The artist cannot form his critical judgment of the ancient artist's work until by the aid of all those scholars, and by means of his own choice among the divergent and contradictory opinions which they offer, he has created in his own mind an image of what the lost building or the ruined building

was really like. The practised builder is quicker than another to judge aright how the ancients builded, and the decorative designer who is familiar with the decoration of many lands and times is more to be trusted than another in his judgment of the artistic purpose of old Greek or older Egyptian; but as builder and decorator alike, the artist needs the help of the scholar, in puzzling out the significance of what has been left us by earthquake and flood, and the more destructive hands of ignorant men.

Those are the conditions under which the present work is prepared. The author has been for many years a close student of the buildings which can be found erect and in use, which can be measured and photographed, and which allow the draughtsman to make sections and the curious constructor to study methods. As, however, he has been busy with art and with building, others have been busy with research, and it is a necessity for the art-historian to find the safest guides in matters of pure erudition. Those were earlier days, and with a smaller field of study, when the same archæologist could propose to himself a knowledge of the buildings and their adornment, and of the texts and the inscriptions.

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New York, *October*, 1906.

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LIST OF ABBREVIATIONS

USED IN CAPTIONS

A. and B. Dicty.: A Dictionary of Architecture and Building, by Russell Sturgis and others (3 vols.). New York: Edition of 1905.

Adam: Ruins of the Palace of the Emperor Diocletian at Spalatro in Dalmatia, by R. Adam. London, 1764.

Antiq. of Io.: Antiquities of Ionia, published by the Society of Dilettanti (3 vols.). London: Vol. I, 1821; Vol. II, 1797; Vol. III, 1840. (Compare Ionian Antiquities.)

Archæol. Untersuchungen: Archæologische Untersuchungen auf Samothrake, by Alexander Conze, Alois Hauser, and George Niemann. Vienna, 1875.

Assos Report: Report on Investigations at Assos. 1881, Boston, 1882 : 1882–83, New York, 1898.

Ausg. Olympia: Die Ausgrabungen zu Olympia, herausgegeben von E. Curtius, F. Adler, und G. Hirschfeld. Berlin: Vol. I, 1876; Vol. V, 1881.

Baedeker: Egypt. Edited by Karl Baedeker. Part Second. Leipsic, 1892.

Benndorf and Niemann: Reisen in Lykien und Karien, by Otto Benndorf and George Niemann: being Vol. I of Reisen in südwestlichen Kleinasien. Vienna, 1884. (See Petersen and von L.)

Bohn: Die Propylaeen der Akropolis zu Athen, aufgenommen und dargestellt von Richard Bohn. Berlin and Stuttgart, 1882.

Choisy, Bâtir: L'Art de Bâtir chez les Romains, by Auguste Choisy. Paris, 1873.

Choisy, Histoire: Histoire de l'Architecture, by Auguste Choisy (2 vols.). Paris, 1899.

E. P. C.: Edward P. Chrystie.

C., K., etc.: Antiquities of Athens and Other Places in Greece, Sicily, etc. Supplementary to the Antiquities of Athens, by James Stuart and Nicholas Revett, Delineated and Illustrated by C. R. Cockerell, W. Kinnard, T. L. Donaldson, W. Jenkins, W. Railton, Architects. London, 1830.

Collignon: Histoire de la Sculpture Grecque, by Maxime Collignon (2 vols.). Paris, 1892–97.

Defrasse and Lechat: Épidaure, Restauration et description des principaux monuments du Sanctuaire d'Asclépios, by Alphonse Defrasse and Henri Lechat.

Dennis: The Cities and Cemeteries of Etruria, by George Dennis (2 vols.). London, 1878.

De Saulcy, Voyage autour de la mer Morte: Voyage autour de la mer Morte et dans les terres bibliques, by Louis Félicien Joseph Caignart de Saulcy. (1852–54, 2 vols.; 1858, 2 vols.)

De Vogüé: Syrie Centrale: Architecture Civile et Religieuse du 1er au VII^{e} siècle, by Count de Vogüé (2 vols.). Paris, 1865–77.

De Vogüé, Temple: le Temple de Jérusalem, monographie du Haremech-Chérif, by Charles Jean Melchoir de Vogüé. (1864–65.)

Dieulafoy: L'Art antique en Perse, Achéménides, Parthes, Sassanides, by Marcel-Auguste Dieulafoy. Paris, 1884–89.

Eu. A.: European Architecture, a Historical Study, by Russell Sturgis. New York and London, 1896.

Ferrero: L'Arc d'Auguste à Suse, by Ermanno Ferrero. Turin, 1901.

Flandin and Coste: Voyage en Perse, by Eugène-Napoleon Flandin and Xavier-Pascal Coste. Paris, 1843.

Gail., Monuments: Monuments Anciens et Modernes, by Jules Gailhabaud. Paris, 1853.

Gosset: Les Coupoles d'Orient et d'Occident, by Alphonse Gosset. Paris, 1889.

J. Guadet: Etudes sur le Colisée, by J. Guadet.

Hdbch.: Handbuch der Architektur [Darmstadt, in many vols.]. Baukunst der Etrusker, Baukunst der Römer. Second edition, 1905. Baukunst der Griechen. Second edition, 1892.

Ionian Antiq.: Ionian Antiquities, published with permission of the Society of Dilettanti, by R. Chandler, N. Revett, W. Pars. London, 1769. (Compare Antiq. of Io.)

Isabelle: Les Édifices circulaires et les dômes, by Edouard Isabelle. 1843–50.

Jahrbuch: Erster Jahresbericht über die Ausgrabungen in Baalbek, by O. Puchstein and others. Zweiter Jahresbericht, etc. In Jahrbuch des Kaiserlichen Archæologischen Instituts. Band XVI, Band XVII.

Jnl. of Hellenic Studies: Journal of Hellenic Studies. London: Vol. III.

F. C. K.: Frank C. Knochel.

K. and P.: Die Griechischen Tempel in Unteritalien und Sicilien, by Robert Koldewey and Otto Puchstein. Berlin, 1899.

Laloux: Restauration D'Olympie, l'Histoire les Monuments, le cult et les Fêtes, by Victor Laloux and Paul Monceaux. Paris, 1889.

Lanciani, Ruins: The Ruins and Excavations of Ancient Rome, by Rodolfo Lanciani. Boston and New York, 1897.

La Villa Ercolanese, by Domenico Comparetti and Giulio de Petra. Turin, 1883.

Martha: L'Art Étrusque, by Jules Martha. Paris, 1889.

Mau: Pompeii, its Life and Art, by August Mau. Translated into English by Francis W. Kelsey. New York, 1899.

Normand: Nouveau Parallèle des Ordres d'Architecture des Grecs, des Romains, et des Auteurs Modernes, by Chas. Normand. Paris, 1825.

Oldfield: Oldfield's restoration of Mausoleum as given by Prof. Percy Gardner, in The Sculptured Tombs of Hellas. London and New York, 1896.

P. and Ch.: Histoire de l'Art dans l'Antiquité, by Georges Perrot and Charles Chipiez. Vols. I–VIII. Paris, 1882–1903.

Pennethorne: The Geometry and Optics of Ancient Architecture, by John Pennethorne. London and Edinburgh, 1878.

Penrose: An Investigation of the Principles of Athenian Architecture, by Francis Cranmer Penrose. Revised edition. London and New York, 1888.

Pergame: Pergame, Restauration et description des monuments de l'Acropole, by Emmanuel Pontremoli and Maxime Collignon.

Petersen: "Ara Pacis Augustæ," by Eugen Petersen. Vienna, 1902.

Petersen and von L.: Reisen in Lykien, Milyas und Kibyratis, by Eugen Petersen and Felix von Luschan; being Vol. II of Reisen in südwestlichen Kleinasian. Vienna, 1889. (See Benndorf and Niemann.)

Prisse: Histoire de l'Art Égyptien, d'apres les monuments, by Prisse D'Avennes. Paris, 1879.

Rayet: Monuments de l'Art Antique, Publiés sous la direction de Olivier Rayet (2 vols.). Vol. II, Paris, 1884.

S. and R.: The Antiquities of Athens measured and delineated by James Stuart and Nicholas Revett (4 vols.). London: Vol. III, 1794; Vol. IV, 1816.

Schuchhardt: Schliemann's Excavations, by Dr. C. Schuchhardt. Translated by Eugénie Sellers. London, 1891.

Spiers: Architecture East and West, by R. Phené Spiers. London, 1905.

Stolze and Andreas: Persepolis, by F. Stolze and F. C. Andreas. Berlin, 1882.

D. N. B. S.: Danford N. B. Sturgis.

Tsountas and Manatt: The Mycenæan Age, by Chrestos Tsountas and J. Irving Manatt. Boston and New York, 1897.

V.-le-D. Dicty.: Dictionnaire Raisonné de l'Architecture Française, by Viollet-le-Duc. Paris, 1858–89.

V.-le-D., Entretiens: Entretiens sur l'Architecture, by Viollet-le-Duc (2 vols.). Paris, 1872.

Waldstein: The Argive Heræum, by Chas. Waldstein (2 vols.). Boston and New York, 1902–5.

Wood: The Ruins of Palmyra and Balbec, by Robert Wood. London, 1827.

A HISTORY OF ARCHITECTURE

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BOOK I.—ANCIENT EGYPT

CHAPTER I

THE BEGINNINGS OF ARTISTIC BUILDING.—THE PYRAMIDS AND OTHER TOMBS

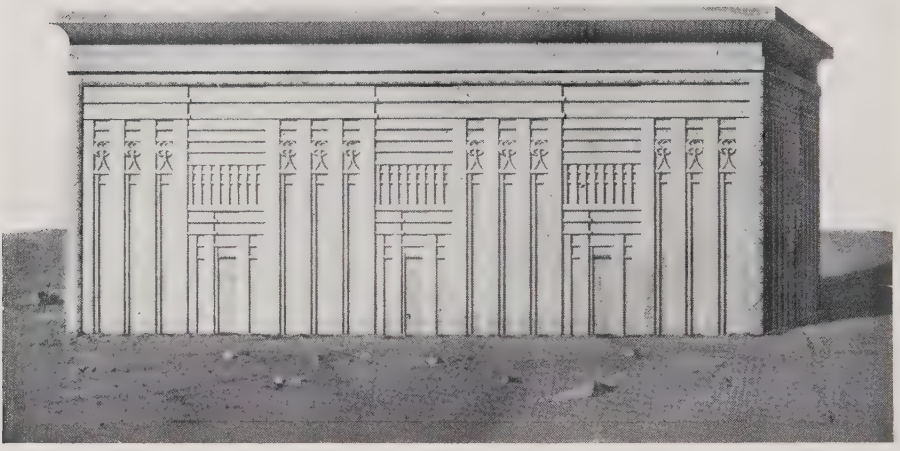
THE architecture of the Nile country had reached dignity and great significance under what is known as the Fourth Dynasty, the kings of which group had their capital at Memphis. Civilisation and a steady rule may be assumed to have existed as early as 4400 B.C.,[1] but there are no monuments that can be set down to the first three dynasties. The Third Dynasty ends with King Sneferu, about 3766–3736 B.C.[1] At this time there was already a system of careful and intelligent stone-building of which some vestiges exist. There was also a vast deal of building done with the tenacious mud, the "black soil," for which the Nile Valley was famous, and which lies 25 feet deep over Lower Egypt,[2] hiding all vestiges of primitive and even historic building except that which is set upon the rising ground which bounds the Nile Valley. There was much use of the same pasty material in solid masses, like the modern pisé, but its

[1] Brugsch; of whose work the simplest form to consult is Egypt Under the Pharaohs, A History Derived Entirely from the Monuments, by Heinrich Brugsch-bey; a new edition condensed by M. Broderick, 1891 (and later editions). The date, 3766, is that given for the accession of King Sneferu; but Flinders Petrie puts it at 3998 B.C., and a still more recent historian, George Steindorff, of Leipzig, assumes a date of 2500 B.C. Of the books published in 1906, Dr. Petrie's Researches in Sinai gives 4731 B.C., and Professor Breasted's History of Egypt 2900 B.C., for the beginning of the Fourth Dynasty. These great discrepancies diminish rapidly with later times.

As for King Sneferu, he is classed by some recent writers (see Meyer in the *Am. Jl. of Archæology*, second series, 1905, vol. ix, No. 4) as the first king of the Fourth Dynasty, and that dynasty is dated 2840–2680 B.C.

[2] By Lower Egypt is meant, in this book, everything north of the Fayum, and therefore of north latitude 29°. The division is sometimes made farther north, so that only the Delta and the city of Cairo are included in Lower Egypt, but it seems better to include ancient Memphis as marked by the modern localities, Ghizeh, Abousir, Sakkarah, Dahshur, and El Lecht, in this division.

application in this way was limited, because of the tendency of the Nile mud to shrink as it dries. Bricks were made of this material; and these were used half-dried, or more thoroughly dried, by the sun, according to the nature of the building proposed. There was also a system of



1—The lost sarcophagus of Menkaura, found in the third pyramid of Ghizeh. (From Prisse, who followed drawings of earlier students.)

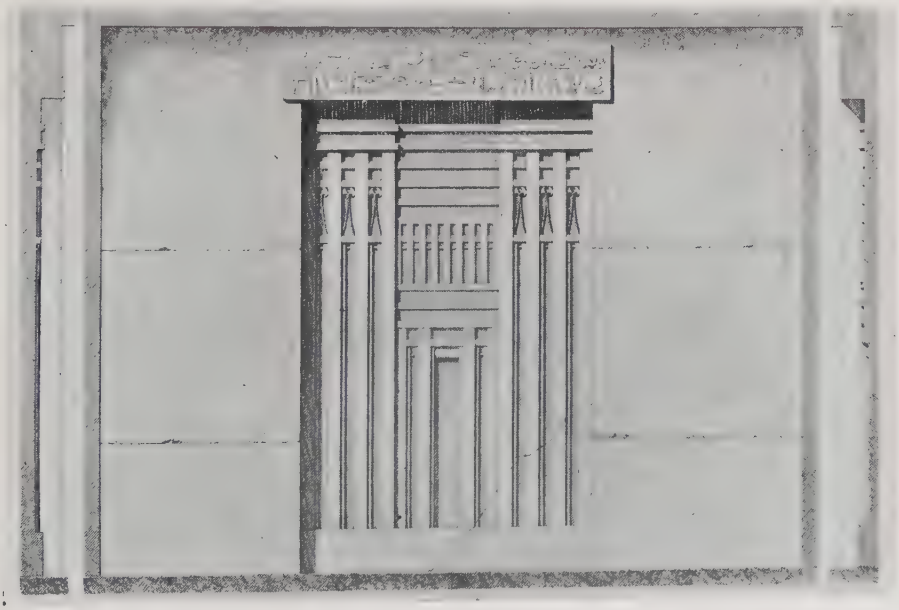
frame construction in which the trunks of palm trees and the stems of huge reeds must have formed the constituent parts; but there is no vestige of framing in heavy timber, and this because Egypt has never been a forest-covered country.

What is the evidence as to these long perished buildings? First, as to the wood-framing, the evidence is in the sculptured walls of tombs, both on their inner and outer faces. The sarcophagus of Menkaura found in his pyramid, the third in size of the pyramids of Ghizeh, was an enormous monolith of basalt, which would be accepted at once as the sculptured representation of a one-story house framed of light, squared posts and horizontal bars (see Fig. 1). Every part of the surface of the hard stone is sculptured in relief with this representation of framework—the only additional ornament being in a limited use of the lotus flower. Fig. 2 shows a similar decoration covering an end wall in a mastaba[3]

[3] Mastaba: a seat built of masonry, and usually at the entrance of a house or shop (Lane's Modern Egyptians). By extension a tomb built above ground, with flat top and side walls having a slight or more decided batter.

very near to the Great Pyramid of Ghizeh, on the east. It is about 14 feet wide from left to right, and the cut shows a recess in the middle of this wall, the width being about 5 feet. At the outermost corners of this recess, where the shadow is seen on one side, the depth is about 5 inches; and the middle panel from top to bottom is recessed about 5 inches more; these measurements being to the face of those little upright strips which clearly indicate studs of squared wood, having horizontal interties of smaller section. The only ornament other than this copying of wood-framing is in the pretty sculpture of lotus flowers in pairs; for the carving on the lintel is of the nature of picture-writing.

The difference between framing by means of bundles of reeds and the framing of squared sticks as seen in Fig. 1 is evident. That the large hollow stems of the papyrus and other reeds of the Nile were used, nearly as bamboo is used in Chinese building, is known from a close

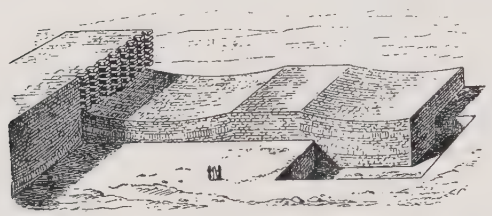


2—Inner wall-face of tomb at Ghizeh. (From Prisse.)

imitation of a bundle of such reeds in the design of stone columns, as in Fig. 22, and of the reeds and their flowering heads, as in Figs. 23, 24, and 25. Those reeds when dry are very stiff, and are not easily broken, even if taken one by one: in large bundles, tightly bound together, they would have a rigidity and even a power of supporting weight comparable

to solid pillars of soft stone. In Fig. 8 there is an evident copy of a screen made of stems of large reeds.

As to building with unburned bricks, it occurs everywhere, but the structures so produced have not preserved their character: nor were they ever, it is probable, of much architectural importance. The outer walls of such sacred enclosures as those among the ruins of Thebes, and known to the modern world by the names of the modern villages, Karnak and Luxor on the east bank of the Nile, and Der el Medineh on the west bank, and that of the sacred place of Seti I among the ruins of Abydos, were all built of large bricks; but these walls are plain ramparts, very thick, but now ruinous, and with no remaining trace of architectural treatment, whereas the gateways of entrance which were built into their circuit are often very magnificent (see Fig. 16). In a very curious way the courses of bricks in these walls were often laid in vertical curves, convex toward the site, and these sweeps or sags follow one another in long succession, not alternating with reverse curves, but stopping abruptly end to end (see Fig. 3). The reason for this peculiarity is not known. Many pyramids, as at Dahshur and Abu Roash, are of brick in their main mass, even when sheathed with stone; and many mastabas are built of these sun-dried flat cakes of Nile mud, and huge masses of these structures are still recognisable and easy to study. Drains and underground passages exist in which the bricks have been used for true vaulting, with wedge-shaped solids,—*voussoirs*, as in Figs. 48, 88, and many in Books IV and V; a system hardly known to exist in Egyptian stone-building. In all brickwork, a mortar of the same material is common. Lime-mortar has not been found in ancient Egyptian building.

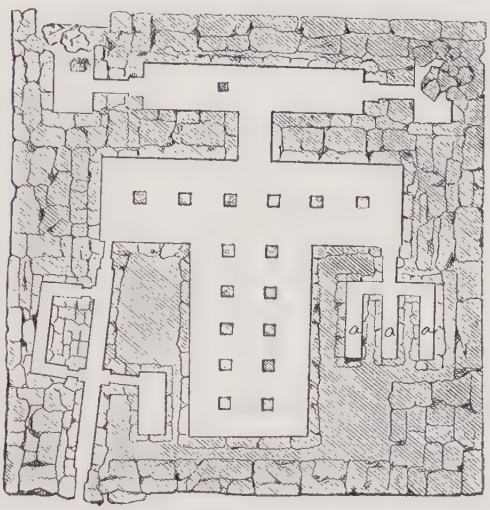


3—System of building in unbaked bricks, in curved courses. (From P. and Ch., Vol. I.)

The solid mud-building is less well known; but its existence in ancient times is inferred from the paintings, together with the example of modern structures. The large pigeon-houses of our own time, close to the river bank, have preserved this method of building, and show also a combination of sun-dried brick with the massive structure. And furthermore, the pigeon-houses show the prevalent slope, the inward

batter of Egyptian walls, which peculiarity tells the same story: the walls diminish in thickness as they rise, to give permanence to soft material. This form was then followed in stone walling. The pyramids are familiar examples; but the mastabas have that form too, though the slope is steeper and there is a larger flat roof or deck. The bounding walls of temples have that form—12 feet or more thick at the surface of the site and diminishing to perhaps one-half that thickness at top. The great pylons[4] and propylons[5] have that form.

The earliest monument to study seems to be the building in the immediate neighbourhood of the famous rock-cut Sphinx,[6] at Ghizeh, near Cairo. This building, called the Granite Temple, or Temple of the Sphinx, may have been a temple of worship or a tomb; a recent writer calls it a gateway building leading to the avenue of approach to the Pyramid of Khafra, named below. There is sufficient reason for identifying it with the Fourth Dynasty: and it is far more important to our inquiry than the pyramids, because leading directly to the great temple-architecture of later times. Fig. 4 gives the plan, and Fig. 5 a photograph from the south-east; but the building is not subterranean as it appears. It is merely surrounded and has been covered with heaped-up sand; standing as it does on the edge of the desert. The square piers are granite monoliths, from three to four feet in horizontal dimension, and carry granite lintels. The lay-out has not been very accurate; but the workman-



4—Granite Temple at Ghizeh. Plan of E. A. Mariette. Work of the Fourth Dynasty. (From P. and Ch., Vol. I.)

[4] Pylon: the gateway building for the chief gate of a temple, or of a gate leading from one court to another, or the like. The typical form is two truncated pyramids between which is the actual gateway (see Figs. 15, 38, 40). The term is often applied to one of the twin truncated pyramids.

[5] Propylon: an outer gateway; usually set within 100 or 200 feet of the outer pylon, and in the circuit of the outermost bounding wall of the sacred enclosure (see Fig. 16).

[6] Sphinx, in Egyptian art, usually male: Androsphinx, Criosphinx, Hieracosphinx, having respectively human, ram's or hawk's head, with lion's body.

ship is excellent, the alabaster slabs and granite blocks have been most accurately dressed and fitted, and the corners firmly clamped. There are no sculptures, no capitals nor bases to the piers, no mouldings; no architectural treatment whatever so far as detail is concerned.

Near the Granite Temple are the great pyramids of Ghizeh (Fig. 6). They are the largest pyramids in Egypt, and next in size are that of Medum, a less comely mass, but probably older, the Step-Pyramid at

5—The Granite Temple at Ghizeh, from above. Fourth Dynasty. (From photo.)

Sakkarah and the largest one of those at Dahshur. All these are of the Fourth Dynasty; and none of later times are as large as the smallest of these. The Great Pyramid, the tomb of Khufu, is a solid pile of limestone blocks with but few and small open spaces within, so far as known. An opening in the northern side, about 48 feet up the slope, leads to a passage only 42 inches high and about 4 feet wide. This slopes downward, and, at about 50 feet from the entrance, gives off a passage which ascends, the slope being in each case at an angle of 27° with the horizon. A horizontal passage goes off from the middle of the ascending corridor, which then terminates in what is known as the Great Hall or great gallery—a continuation of the ascent, but widened and its height increased to 28 feet. All three of the passages lead into chambers of which the largest is about 17 by 34 feet and 19 feet high; and in this was the sarcophagus of King Khufu. These chambers, as well as the great gallery, are lined sometimes with limestone, sometimes with granite blocks, without ornamentation but with an astonishing perfection of finish. Above one of the chambers are five construction-openings, to save the ceiling from the crushing weight above. It is altogether probable that other chambers remain un-

discovered; one corridor, at least, stops abruptly against what may be a permanent wall, or may still conceal an open space. Except for such chambers and corridors, the building is a solid mass, covering 13 acres; that is to say, it was, in its completed state with the smooth stone facing in place, 768 feet square and 482 feet high. It was therefore higher than any masonry building of which we have record, except three slender towers of the nineteenth century—viz., the Washington Obelisk, the spires of Cologne Cathedral, and the "Public Buildings" or City Hall, in Philadelphia. The present dimensions of the pyramid are a little less, owing to the disappearance of the sheathing which once brought it to a perfectly pyramidal form, whereas now it

6—Stone Pyramids at Ghizeh. That of Khufu at the right, of Khafra in the centre and of Menkaura at the left: all of the Fourth Dynasty. The present heights are about 450, 445, 208 feet, from 10 to 30 feet being lost with the casing. Two small pyramids in front. (From photo.)

shows the steps formed by successive courses of limestone blocks (see Fig. 6, in which a small part of the sheathing may be seen in place near the top of the second pyramid).

The second and third pyramids stand near together, and nine much smaller ones are in their neighbourhood. They have little artistical character, of course; and it is only their mass, and the problems

which concern their method of construction, which give them their great interest for modern explorers. It has to be admitted that the Memphis kings of the Fourth and Fifth Dynasties had an absolute control over their subjects.[7]

The building of the Great Pyramid is ascribed to Khufu, formerly called Kheops or Cheops (3733–3700, Brugsch, but see footnote, p. 3). He is either the first or the second king of the Fourth Dynasty, as different writers make up the list; and it is with the kings of the Fourth Dynasty that some positive history of Egypt may be said to begin: this history being based upon thousands of inscriptions, often wrought upon the permanent stone buildings of the time, often upon rock-faces. In such ways are identified as being earlier than the Great Pyramid the magnificent painted limestone statues found in a mastaba at Medum and preserved in the Ghizeh Museum. These figures are not wholly detached from a background-slab and seat—the two together giving the effect of a high-backed chair: and yet they are free statues in their modelling and treatment; not in any sense reliefs. On this background-slab for the male figure is inscribed the name Rahotep; and the name Nefert, his wife, is given for the female statue: and they are to be taken as near relatives of the sovereign.

Of Khufu himself there are inscriptions and reliefs in many parts of Egypt; and some of the inscriptions tell of important buildings whose trace is not yet discovered. His successor was Khafra, whose pyramid, the middle one in Fig. 6, is nearly as large as that of Khufu. Several statues, identified by inscriptions as representing Khafra, were found in the so-called Granite Temple. One of these is the magnificent statue in the Ghizeh Museum cut in solid diorite and highly polished. The head of this statue is unsurpassed as a work of realistic art in all the records of sculpture: although probably more ancient to the sculptors of the Parthenon than the Parthenon is to us. The term "realistic" applies accurately, because of the evident deliberate seeking for faithful portraiture, and the wholly individual type of head; the proportions of the body and pose being always a matter of fixed rules.

The successor of Khafra was Men-Kau-Ra, called Mycerinus (3633–3600, Brugsch), and the third pyramid at Ghizeh is accepted as his tomb. Another tomb at Abu Roash, among the hills north-west

[7] For the means of transportation and raising of heavy stones see Choisy, L'Art de Bâtir chez les Égyptiens; also his Histoire de l'Architecture.

of Ghizeh, is also identified with this prince, chiefly by the discovery within it of the inscription on a broken statue, combined with the peculiar finish of the stone lining.

The pyramid-tombs of the kings extend along the western hillside or cliff which separates the Nile Valley from the western desert. The most important are included in the necropolis of the ancient capital, Memphis. At Abousir, about 8 miles south-east of Ghizeh, are the largest known, after those named above: one of them is estimated at

7—Stone Pyramid at Dahshur. With double slope. About 620 feet square and 320 feet high. (From photo.)

230 feet in height. At Sakkarah, about 5 miles farther south, near the famous "Step-Pyramid" named above, is that of King Unas of the Fifth Dynasty. At Dahshur, still farther south, besides the huge pyramid mentioned above, and which was over 320 feet high, is the pyramid of double slope, that is, with sides at first steeper, then less steep, like a curb-roof ("Mansard roof"), as if an intention to build very high had been abandoned later (see Fig. 7). All these are ascribed to the Fourth and Fifth Dynasties. Kings of the Twelfth Dynasty built their pyramids at Lisht (El Lecht) still farther south (about 30 miles above Cairo). The reason for the supreme size and dignity of very early pyra-

mids is not known. There is no reason to suppose that the complete control of the people by the central authority was any less strong, under later kings of the Fourth Dynasty and those of succeeding periods than under Khufu. It has been suggested that the frequent plundering of the tomb-chambers in the older pyramids convinced later kings that their coffins could not be secured in that way from violation. It would seem as if the eager demand for enormous size, taken by itself, had passed from the minds of those who had the control of Egypt. A nobler form of memorial succeeded to the vast pile of rocks. The beginnings of columnar architecture appeared. The square-edged pier, like that used in the Granite Temple (Figs. 4 and 5), was sculptured on one or on two of its faces; masses being left in relief, which were then carved into vegetable or other forms, and richly painted (see Fig. 26). The column itself was to take shape, first by cutting off the corners of square piers, and cutting off the new, blunter corners yet again (see Fig. 9): and much richer forms were to be invented, as in Figs. 22 to 25. Meantime the interest centres on the tombs and their contents, for many reigns succeeding that of Menkaura.

The Fifth Dynasty, 3566 to 3300 B.C., and the Sixth, ending 3033 B.C. (both according to the dates of Brugsch: the Sixth Dynasty ending about 2200, according to Steindorff), are traced through their centuries by inscriptions in different parts of Egypt, where in many cases the pyramid is recorded and its site named, while as yet the building has not been identified. Sculpture in the form of solid statues and statuettes and in the form of low reliefs, inscribed cartouches cut upon the lids of vases, upon cylinders, and the under side of scarabs,[8] preserve the history of these times and are constantly undergoing renewed examination and comparison. The sculpture, moreover, is of extraordinary interest, and it is not to be ignored that everywhere the sculptor has tried to express the facts of life, imitating nature more closely than has ever been the custom of the creators of important works, in any succeeding epoch of fine art. In painting, too, with which we begin to become familiar even in the Fourth Dynasty, there is much success in representing peculiarities of face, patterns of garments, and of carved decoration on boats, chariots, and implements,

[8] Scarab: a figure of a scarabæous beetle, cut in stone (often a gem) or cast in pottery; often left with smooth under surface to receive an inscription or figure incised upon it. When the suggestion of the living form is more slight, often scarabæoid.

and vessels for use or ceremonial display; and also a successful effort to show the facts of life in plumage and fur. The decorative success of this painting is also very great. But the pyramids of this period are unimportant architecturally; they are carelessly built, as well as small when compared with those of Medum and Sakkarah, and the three at Ghizeh. No temples nor parts of temples remain for us, and the tombs are the most important monuments of the epoch. The famous Mastaba El Faräun ("seat of Pharaoh"), probably of the Fifth Dynasty, and close to the Pyramid of Unas at Sakkarah, is like a pyramid in its internal arrangements. It opens to us many questions as to the real significance of those descending passages, and the granite sliding blocks, descending when a temporary support was burned, and protecting the tomb-chamber. As this rough stone tomb, with sloping sides and flat top, was evidently sheathed with smooth stone, it may be that there is here another variety of royal tomb: that the pyramidal form was not always used for the memorials of kings. In other mastabas, also near Sakkarah, and therefore on the rocky hillside rising to the west from the plain where stood Memphis, are most valuable decorative and descriptive works of art. The tomb of the official Ti, of the Fifth Dynasty, has its walls lined with sculptures in low relief, and these have been painted. At Abousir, also marking a suburb of ancient Memphis, is the tomb known as that of Ptah-shepsees. These dark chambers, by their wall sculptures and painted scenes, give us much insight into the manners and customs of ancient Egypt, and even into ways of building now lost to us; as is shown elsewhere. None of them, however, gives us even a slight help toward the later development of architecture. The forms of the masonry and stone-cutting are generally without architectural treatment as distinguished from good workmanship: and although two clustered columns were found in the tomb of Ptah-shep-sees, and removed to the Cairo museum, these alone are not an adequate proof of so early a beginning of columnar architecture. Building in crude bricks must have been common, and also solid erections of Nile mud, though small and low; and houses made upon a skeleton of reeds; and, again, walls and roofs of reeds alone: but what we learn of these primitive methods of building is drawn from the architectural forms of the Fourth and following dynasties. Thus Fig. 8 gives a wall in the tomb of Ti, at Sakkarah; and it is probable that a wall or fence of large reeds set close together is represented by the ribbed background upon

which the human figures are relieved by being left in flat, smooth stone, while the rest of the surface was "reeded."

It is not to be forgotten that during these long centuries, from an unknown period to 1300 B.C., roughly, the whole Mediterranean world was thinly settled by peoples of savage life, or of very low civilisation, except for Egypt and those South Mesopotamian States (see Book II), whose existence has been revealed during the past fifteen years. The civilisation of Egypt, unsupported by intercourse with foreigners,

8—Wall at Sakkarah, in the tomb of Ti (Thy), a priest, and keeper of the Pyramid of Neferarkara, who reigned in the Fifth Dynasty. (From photo.)

may well have degenerated, more than once, during a period of time as long by one computation as that which has seen the Exodus, the war with Troy, the glory and decline of Greece, the rise and fall of the Empire of Rome, the Middle Ages from Theodoric to Charles the Rash, and what we call Modern Times—thirty-two centuries. We trace in Egyptian art at least three such periods of decay, after each of which energy and intelligence are seen to be restored by some powerful and high-minded prince, again to lapse.

The remarkable characteristics of the tombs do not constitute in themselves architectural importance. It is not from the tombs that the

artistic influence emanated which spread from the valley of the Nile deep into western Asia, and at a later time over the whole Mediterranean world. For that influence we must go to the architecture of the temple; and this does not even begin, for modern students, until the Twelfth Dynasty. This is absolutely earlier than any other skilful building of which we have record, except in Babylonia or in the peninsula of India; and it is many centuries earlier than any other architecture in the world which we have in such condition that we can judge of its artistic character.[9] In many a tomb there may be found admirable workmanship, and even artistic cutting of incised or low-relief sculpture: and some semblance of architectural character may be given by the fitting of a lintel or a whole doorway or a row of suggested pilasters of conventionalized plant-form: but nowhere is there organised and carefully planned building, with deliberate artistic aim. In other words, architecture has not begun. But in the tombs at Beni-Hasan it may be said to have begun. These tombs are cut in the rock, not far from the Nile, on its east bank; and in the heart of Egypt—far below Thebes, the later capital. Here, in vestibules, and again in the tomb-chambers within, the roof is supported by piers which, instead of being perfectly square, like those of the Granite Temple, Fig. 5, have had their corners taken off so as to produce an octagonal pillar. Some of these again have the corners of the octagon cut away so as to produce a sixteen-sided shaft. Yet again the chisel has been used to produce a slightly concave channel, in place of a flat side. Fig. 9 shows three of the tomb-fronts at Beni-Hasan; the first of these having the sixteen-sided column with flat faces, the smaller tomb showing a sixteen-channelled shaft, and a third tomb to the right showing columns much defaced. This limestone hill is on the eastern bank of the Nile, and it is customary to number the tombs as we go upstream, that is, toward the south. Of the tombs shown in Fig. 9, the one on the left is the famous one known as the tomb of Khnumhotep: with the number, 3, now painted on the rock in red. The interior of this tomb is a chamber nearly square, and somewhat wider than the whole width of the portico as shown in the photograph. The roof

[9] The Twelfth Dynasty is dated by Brugsch at 2466–2233; and from this period on, the discrepancy between the dates as fixed, approximately, by this and that modern Egyptologist are not so formidable. Dynasties XIII to XVI are little known; they include a time of foreign rule (the Hyksos, an Asiatic race of conquerors); and they include all the time from 2233 to 1733 (Brugsch) or 2050 to 1575 (Steindorff)—these being the extremes.

of this chamber was supported by four pillars, also sixteen-sided; but all this was excavated in solid rock, and though these are broken away the roof holds, so that their partly decorative purpose is indicated. In the face opposite the entrance is a recess—a kind of niche in which there was probably the seated statue of the dead. The photograph shows, above the lintel of the portico, the ends of fillets or slender

9—Porches of Tombs, Beni-Hasan (Eleventh or Twelfth Dynasty); alleged "proto-Doric" order. (From photo.)

projecting mouldings on the under side of an overhanging cornice. And the interior shows further traces of an imitation of carpentry work not unlike that shown in Fig. 1.

These are the columns which have been called proto-Doric, and of which it has been thought that they are the first step known to us in the development of the Doric Order of the Greeks. It is not advisable to lay much stress upon such resemblances. The Beni-Hasan colonnades, humble cliffside porticos, forming the mouths of caves wrought in the soft stone; and far away in the south, 200 miles from Alexandria, or that Rhacotis which was the seaport of Egypt in Pericles's time; out of reach of the traveller and still more of the Grecian builder—erected, moreover, perhaps sixteen centuries before the Grecians had begun to think of columnar architecture—these, and the nearly

contemporary hypostyle hall of Thutmes III, at Karnak, are hardly to be supposed a powerful influence in that direction. Men who build with their souls in the work will copy the new, the active, the still growing; they do not, as long as living architecture is a possibility, go far away into the night of the past, and copy buildings which to them are remote antiquity.

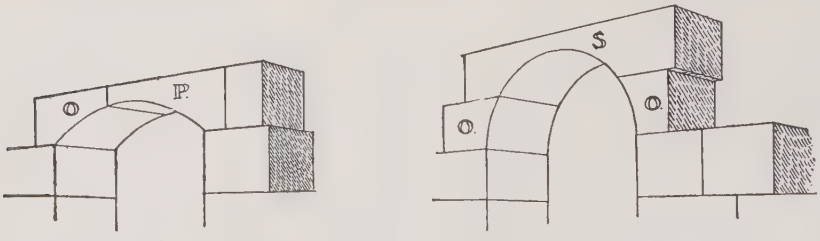
Diorite statue of King Khafra or Chefren (3666–3633 B.C., Brugsch; about 2400 B.C., Steindorff). Found in the well under the granite temple at Ghizeh; now in the Cairo Museum. (From photo.)

CHAPTER II

THE COLUMNAR ARCHITECTURE

THE truly architectural history of Egypt begins with the first temple which we have in any condition enabling us to judge of it. And first, as to the building in squared and dressed stone, this was generally of limestone in Lower Egypt, of sandstone farther up the Nile, of granite only on occasion. Although it was quite feasible to bring even very large stones hundreds of miles from their quarries, it consumed much time to bring them to the river and float them down, and the readier means were more commonly used.

Egyptian building in cut stone[10] is generally limited to post and



A B

10—Corbelled construction of curved ceilings of chapels (as in temple, Fig. 11).

beam construction of the simplest kind. There are, however, some peculiarities of building which involved the use of corbelling on a large scale. Thus, the desire to produce a hollow curved roof to a passage has resulted in a structure like that shown in Fig. 10. There is no arcuated construction in this, but in A the stone *o* projects a little way beyond its bed, the stone *p* farther beyond its bed (this being quite ar-

[10] For the stone building of the Egyptians, the methods employed, the means of transportation and of handling heavy monoliths, consult Auguste Choisy, L'Art de Bâtir chez les Égyptiens, Paris, 1904. The inferences given are acknowledged as open to question; but they are sagacious and technically safe.

bitrary), and the two help support one another. In B the two stones *oo* act as corbels and carry the covering *s*. Now if this superincumbent weight, *s*, be cut as shown in B, Fig. 10, we get the appearance, from below, of a tunnel vault of semicircular curve; and from the structure A results a form like that of a tunnel vault which an ordinary segmental arch would give. The seven chapels in the great

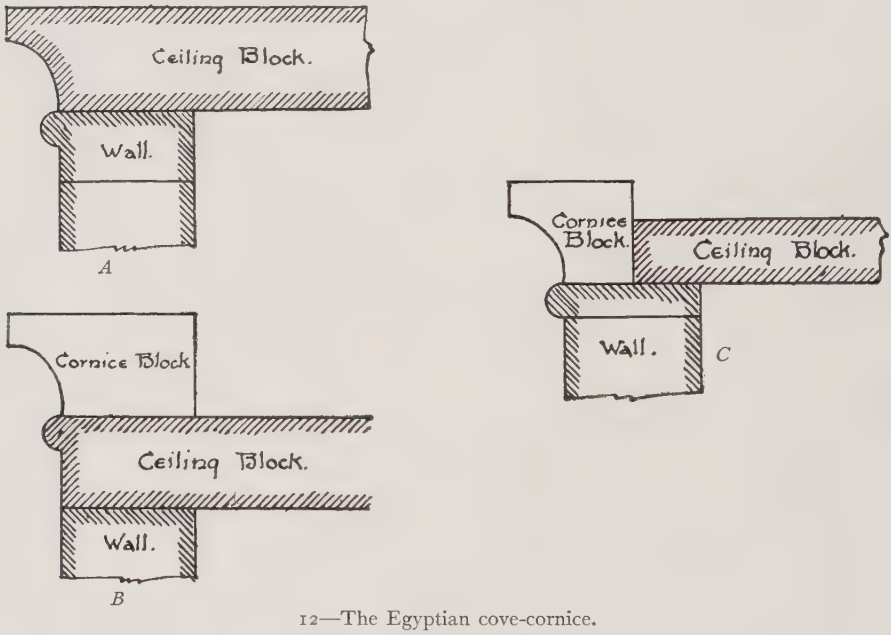
11—Temple of Seti I, at Abydos, about 100 miles below Thebes. Built in the Nineteenth Dynasty. (From photo.)

temple of Seti I at Abydos are roofed in this way, and Fig. 11 shows imperfectly some building of this kind at this famous site. Whether this was a reminiscence of the brick-vaulting in drains and underground passages, or whether it was a reminiscence of an earlier arch-construction with stone-cut voussoirs, is not known; but we know of no stone arches in the Egyptian monumental building.

The superincumbent weight, *s* (Fig. 10), will be, very often, the actual ceiling of heavy stone slabs. But this course or tier of slabs is much more commonly the only roof; strictly homogeneous, and turning one face to the room below, the other to the sky. This ceiling course of heavy slabs, where it reaches the outer face of the building, would be, naturally, cut to an agreeable profile; and it is this shaping of the edge of this course of large stones which gave the remarkable profile which we know as the Egyptian cornice especially so called; see Fig. 12, in which *a* shows the normal condition. It might happen equally

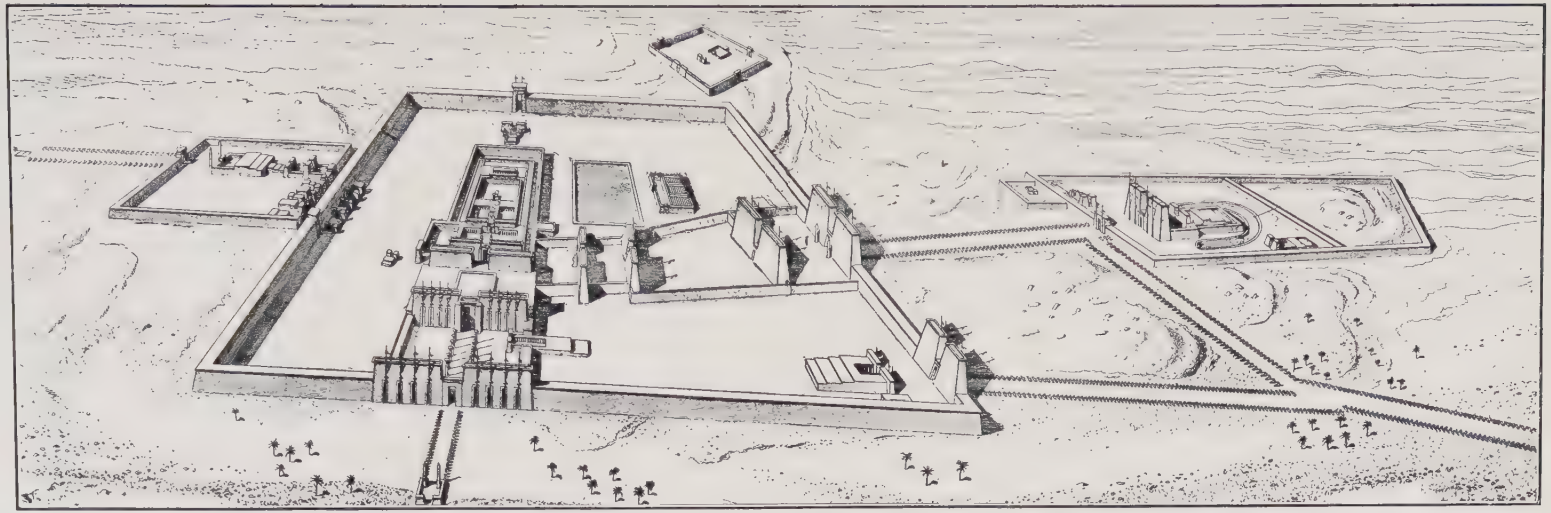
well that a course of stone below the final layer of cornice blocks would be so dressed on the edge as to supply the torus or convex moulding which was felt to be a necessity, and that the ceiling block furnished this alone (see Fig. 12 *b*). It is only when the true meaning of that cornice is lost altogether, as at Fig. 12 *c*, that the design shows signs of decay, as all styles of design show it after a while, in the loss of essential meaning.

In all this work with large masses of stone the Egyptians seem to have thought of mortar as a possible means of securing a smooth and uniform bed. It may be said that dry stone building was the rule: but



12—The Egyptian cove-cornice.

that assistance from a yielding substance, taking readily a flat and even bearing, was occasionally called for, as when there was difficulty in the cutting or rubbing of the beds to complete smoothness. As to the temple, the rougher outside walls, the boundary walls of the sacred enclosure, were commonly built of crude brick, as described above. They were very heavy and massive, without adornment which still remains to us, but having important gateways, three or four in each bounding wall, which are of cut stone, and are covered with elaborate painted reliefs. Such a bounding wall may enclose many acres of ground. Among the ruins of Thebes, near the modern village of Karnak, one such enclosure is about 1,700 feet square—200 acres or more: and there are



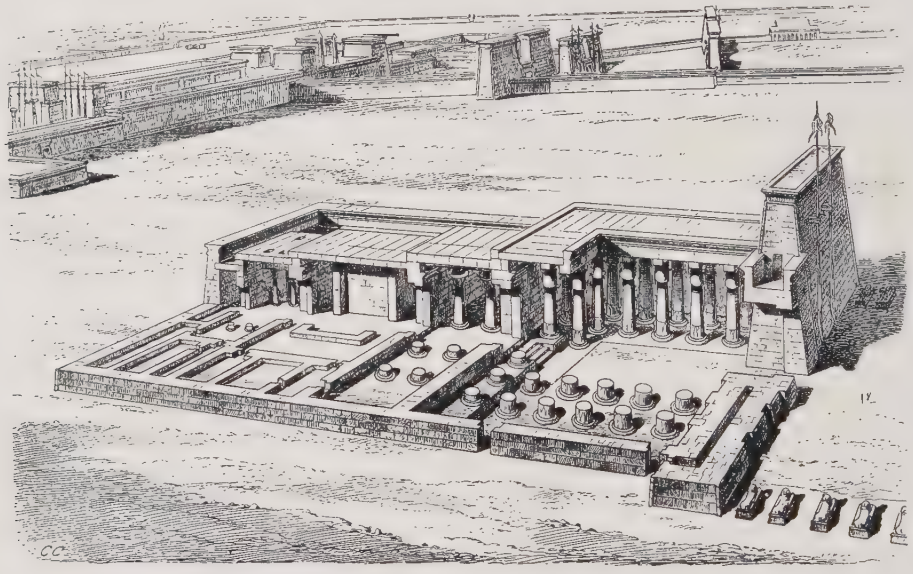
13—View of temples and enclosures at Karnak; among the ruins of Thebes on east bank of Nile. In foreground, avenue leading from landing place to first pylon. Great Temple of Ammon lying N. W. and S. E. (see Fig. 17). Beyond is a small temple and the propylon of Nektanebo, about 350 B.C. To right, sacred tank or salt-water lake, and buildings now much ruined: except Temple of Khunsu in corner of enclosure (see Fig. 14). All these, within the great enclosure.

On the left (N.E.), Temple of Mont, in its own enclosure; now much ruined and never thoroughly explored.

On the right, Temple of the Goddess Maut, or Muth, in its own enclosure (see Figs. 15, 16).

The avenue on the right leading to Luxor and its branches were paved streets with rows of sphinxes of different types. (From P. and Ch., Vol. I., where credit is given to M. Brune.)

two smaller enclosures close at hand (see Fig. 13). Within this bounding wall the temples themselves present, generally, much higher walls, usually of cut stone and often carved and painted from top to bottom, and including a huge double pylon through which the principal entrance was had. This high wall completely enclosed, first, a court which might or might not be peristylar and from which a large vestibule, generally having columns, was entered with a slight rise of the pavement. Beyond the vestibule there were the inner rooms of the temple, the Holy of Holies, without direct communication with the exterior, and with little provision for admitting daylight; and about



14—Perspective section of proposed restoration of a small temple: that of Khons or Khunsu at Karnak. (From P. and Ch., Vol. I.)

this were grouped passages and other small rooms, one of which contained the sacred ship, sometimes wrought in granite; or certain movable tabernacles, or shrines like those of the Mediæval church in Europe, of hard stone or of wood richly painted with figure subjects. This is the essential plan of an Egyptian temple, and our knowledge of the actual use of the different rooms is vague.

Fig. 14 is Mr. Chipiez's restoration of a small temple, with the avenue of Sphinxes leading to the entrance. The half of the temple which is farthest from the spectator is supposed complete, with half of the great pylon marking that entrance, the peristyle along one whole side of the court and returned as far as the doorway to the vestibule,

half the vestibule with its system of eight columns, and, beyond that, half the inner apartments, of which that one which is the plainest and the most nearly in the middle is the Holy of Holies. The other half of the temple is supposed exactly similar to the one which remains intact, but cut horizontally four feet above the site. The curious structure attached to the great pylon, and which resembles a balcony, is half of the actual gateway of entrance, and of the gallery above it, with a parapet so high as to mask the passage from the one tower of the pylon to the other.

The building from which Fig. 14 was drawn is the Temple of Khunsu among the ruins of Thebes. The drawing suggests that importance of the flat roof which has been alluded to, and also the encasing of the whole series of courts and chambers by an outer wall built with a decided batter. The vestibule is shown with eight columns, an element of the plan which in some cases is enlarged to a great hypostyle hall, and which forms a most prominent feature, and beyond these the small rooms and passages of which we have but slight knowledge. The reader is referred to the much later temple of Edfu, Figs. 38 to 40, for the photographic representation of a similar structure.

This temple of Khunsu is a simple building, and there is near at hand another small temple the temple of the goddess Maut or Muth. This is the most southerly of all the buildings which we include in our common term, The Temples at Karnak: and there is no doubt that it was built by Amen-hotep or Amenophis III (about 1500–1466, Brugsch, 1427–1392, Steindorff), in the Eighteenth Dynasty. The Temple of Muth is the larger building, about 340 feet long from out to out, while the Temple of Khunsu is only 250 feet long. But in connection with the latter is the huge double pylon built by the Lagid prince, Ptolemy Euergetes I (247–222 B.C.), not shown in the cut because 120 feet distant from the temple proper, and this is united to the actual temple by its double row of sphinxes. At the Temple of Muth, still another gate of the later kings, that of Ptolemy Philadelphus (285–247 B.C.), is seen to be a propylon, and quite separate. Fig. 15 gives the northerly pylon and the western wall of the great court; and Fig. 16 shows the propylon and the northern front of the temple. The reader may note how these two structures, more than twelve centuries apart in time, yet agree almost perfectly in style: the later piece, oddly enough, since it belongs to the period of Grecian influence, much the more elaborate in its adornments. In the extreme fore-

15—Pylon of Temple of Muth, Karnak. (From photo.)

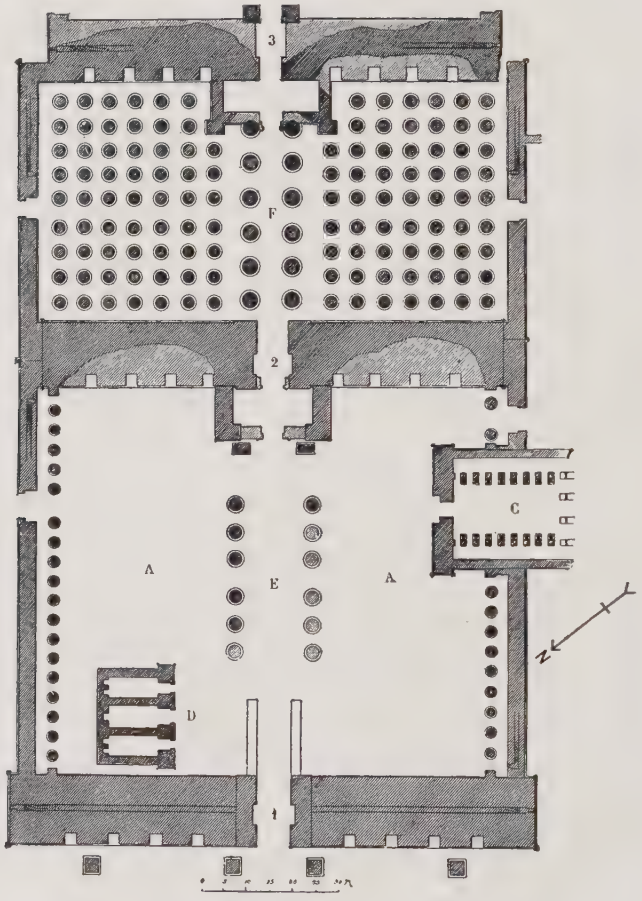
16—Propylon and main pylon, northern front of Temple of Muth, Karnak. (From photo.)

ground are remains of an avenue of ram-sphinxes: on the left and right are fragments of that girdle wall of heavy brickwork in which the Ptolemaic propylon is included, as the only important entrance to the sacred enclosure. The cut-stone building on the left is a small ruined temple—that on the right, and coming against the sky in the distance, is generally called the Temple of Rameses III.

These temples of Khunsu and of Muth are simple; but the Great Temple of Ammon near at hand has many additional rooms, courts, galleries, and shrines. Fig. 17 is the plan of this great temple which measures from out to out about 1,200 feet. This complex structure is of many successive periods, but was commenced, unquestionably, in the Twelfth Dynasty. It has, first, a great double pylon, with gateway, 1; then an open court, A A, with two ranges of columns forming an avenue, E, which leads to an advanced vestibule built out into the court. A second double pylon, with gateway, 2; then a great hypostyle hall, F, famous in the literature of architectural art for its vast dimensions and its overwhelming grandeur, forms the architectural culmination of the group. This hall (see below) leads to a second advanced vestibule and a third double pylon, with gateway, 3. An entirely open court, an almost complete cross street, as it were, in which stood four obelisks, separates the third from the fourth double pylon, with gateway, 4; this leads to a great vestibule, G, planned with eight columns on either side, some of which have been removed to make room for two gigantic obelisks, set up in a place so narrow that they could hardly have been seen from foot to point at once. Beyond this vestibule is the fifth double pylon, 5, and then a cluster of inner chambers, H, entered by the gateway, 6. Beyond these again, still going south-east, is another great court, I, and among the ruins which encumber it some archæologists think they have found the site of the sacred chambers, while others place this at H. Beyond this court another set of chambers are ranged around a great vestibule, J, large enough to be called itself a hypostyle hall; and the whole of this vast congeries of buildings stretches from north-west to south-east for nearly a quarter of a mile. All is of sandstone, except the rooms at HH, which are walled with granite. In space occupied it is excelled by some palaces of modern Europe,[11] but the comparison is of no permanent value, because the Egyptian buildings are wholly one-storied, flat-roofed, and

[11] The remarks in the work of Perrot and Chipiez as to its great extent refer to the outer bounding wall, of brick, now much ruined; not to the group of massive buildings.

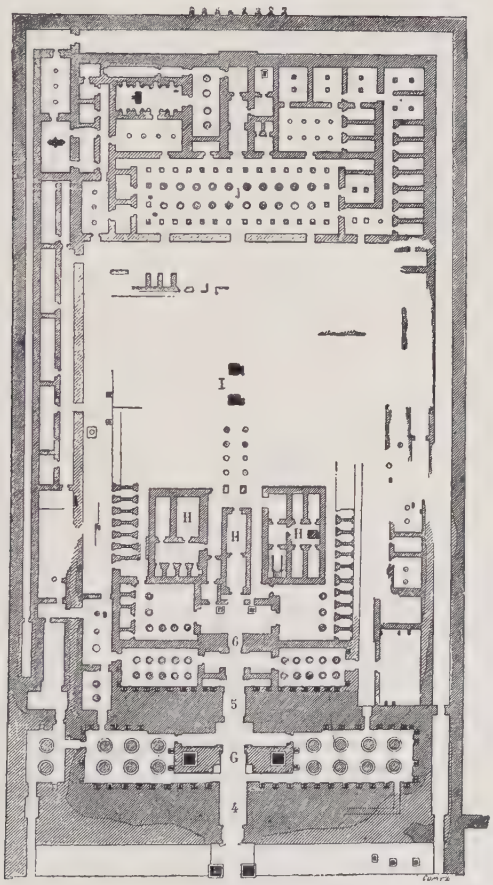
planned for a single purpose, namely, the producing of a series of overwhelming impressions upon one who passes through their courts and halls, and a more sunny, open, and agreeable impression upon the spectator outside, who passes in review the vast display of painted sculpture which the bounding wall presents.



17A—Plan of Temple of Ammon, Karnak; northwestern half.
(From P. and Ch., who follow M. Brune.)

To take now the hypostyle hall, F, Fig. 18 gives a carefully made model reproducing its interior effect, as seen by one standing nearly on the axis of the middle aisle, only about two-fifths of the whole being reproduced. This model may be trusted, except for some details of the painting; and it reveals the following system—a middle nave, itself consisting of three parallel aisles of great and equal height; that is to say, divided by two rows of columns with campaniform capitals; a flat roof,

76 feet above the floor, supported by these and by side walls made up wholly of the small piers dividing clearstory windows—windows which rise above the roofs of the adjoining structure so as to light the middle nave; and two wings, each a single hall with flat roof 46 feet above the floor, and supported by seven rows of columns set 9 in a row. It is visible, too, that the larger columns carry, first, square blocks of about



17B—Plan of Temple of Ammon, Karnak; southeastern half.
(From P. and Ch., who follow M. Brune.)

the same horizontal surface as the round shafts below, the purpose of these being to separate the whole delicate edge of the capital, 46 feet in circumference, from the direct weight of the huge stone lintel above and its superstructure. These lintels, forming a continuous lintel-course from end to end of the great nave, together with similar lintel-courses above the clearstory windows, carry the actual slabs of the roof. On either side are, not merely two rows of columns

as shown in the model, but seven rows, these smaller columns having that lotus-bud capital which we see in the photograph, and supporting, first, square plinths like those described above as topping the

18—Central part of Hypostyle Hall, in Temple of Ammon at Karnak. Nineteenth Dynasty. (From photo of a model.)

great campaniform capitals, and, secondly, lintel-courses similar to those of the great colonnades, though not running parallel with them. Now, the size of all these columns is very great; each one of those of the middle rows is 10 feet 7 inches in diameter where it is largest, about the same thickness as Trajan's Column at Rome, which is a free-standing monument, and has a winding stair inside (see Book V). The photograph shows that the intercolumniation is very little larger than the diameter of the shafts. Thus, while the solids are greatly in excess of those of any known decorative interior, the open spaces are proportionally small. There is no place in the hall where the eye can see farther than the fourth column away, except by looking directly along one of the alleys; in which case the perspective of the columns, thickly set as they are, produces an effect as of a single massive wall with slight projections. It is only in the middle alley, with the larger and wider-spaced columns, that the effect of being in a great hall is given; everywhere else one passes from space

to space, meeting with column after column, and receiving a general impression of very great extent occupied by buildings of quite immeasurable weight and mass. Fig. 19 gives the appearance of this model as seen diagonally; and through the spaces one may see out of and beyond the thickly set columns; but the reader may amuse himself by trying on the plan how much of such an effect is possible in the complete building, with its five additional rows of columns on either side.

It is not gigantic size only, nor the impressive effect of huge masses, which the Egyptians sought. They were as much interested in columnar architecture as even the Greeks of the time of Pericles, and it is evident that they enjoyed the columns themselves and the structures of which they formed a part. The extreme degree of divergence in the

19—Another view of the Model (Fig. 18).

Greek and the Egyptian ideas of a column is not to deceive us for a moment. The Greek column, channelled or fluted, and cut with a peculiar rounded curve (see Book III), was treated with colour, including some painting of the shaft itself; but this seems never to have been

carried into representative or expressional painting. The Egyptian column, covered with painted figures from top to bottom, and in many cases wrought with cœlanaglyphic[12] sculptures which are then elaborately treated in colour, was more in itself, shaft and capital taken together, than any column of the Greeks. And the great size to which these separate members were carried very often gave them an individual dignity hard for us to conceive. The model shown in Figs. 18 and 19 includes a small figure of a man, introduced to give the scale of humanity. If, then, the paintings on the larger rounded shafts were more than twice the height of a living man, and if those on the smaller shafts were ten feet high—the rest of the decoration being on a scale to match—it appears that here is a picture gallery, or, in certain cases, a gallery of painted relief sculpture, of special religious and traditional significance. This would hardly produce the effect of a modern display of paintings, all hung or secured to flat walls, and each assumed to be put into the best possible light for study, but, on the other hand, an effect of bewildering extent and variety, and a constant succession of contrasting colours, the effect of which is absolutely out of the way of our modern experience, and beyond our conception. No man of the European world has seen a painted interior of this importance; nor has any one seen sculpture treated in full colour, and still serving as the universal ornamentation of a vast building.

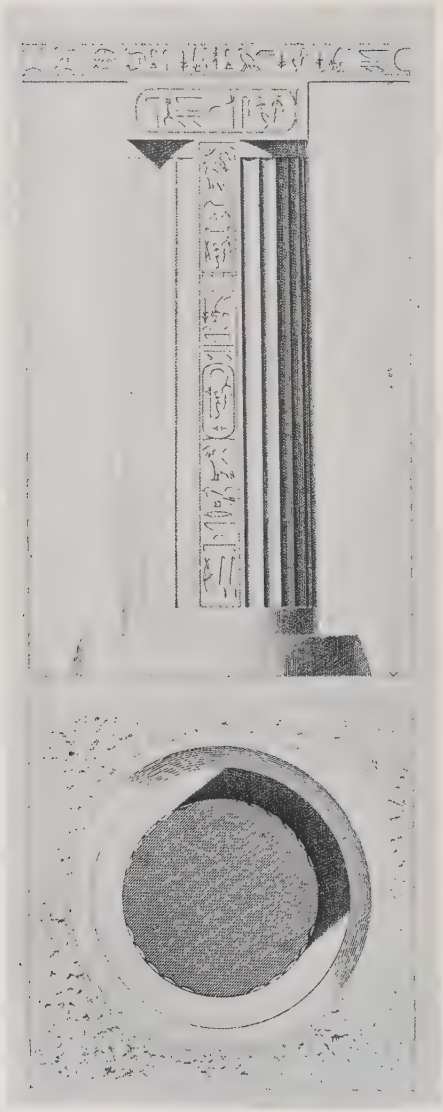
But consider the columnar architecture of Egypt without the use of this overwhelming effect of colour, and without the varied effects of interior gloom and majesty. Consider a columned portico meant to be seen in the full light of the Egyptian sunshine. The reader must be warned against the very attractive photographs and drawings of long colonnades, such as the views of Luxor from across the narrow arm of the river. In these pictures the great columns are often seen to rise high above the ruined masses around; but it is not in that way that they were meant to be seen. Those great columns were meant to be concealed by the enclosing walls, and all such views of ruins are rightly used only when they help toward the understanding of the buildings which the designers had in mind. If we were to follow only the existing remains of buildings earlier than the Twelfth Dy-

[12] Cœlanaglyphic; also concavo-convex or cavo-rilievo: denoting relief-sculpture which is in a sunken panel, which it fills completely, leaving no background. It is as if a groove were cut around the sculptured figure, which is then wrought into complete modelling; while the background is not cut away, lowered, or abated, as in ordinary relief (see Fig. 33).

nasty, we should infer that the Egyptian columnar architecture was mainly an architecture of the interior, and one especially intended to be

20—Sculptured wall of Ramesseum; the great Temple of Ammon, among the ruins of Thebes on western bank; opposite Karnak. (From photo.)

seen by a dim light; with which tendency we may compare the interior of the Greek naos (Book III), although the architectural importance of that interior cannot have been so great. On the other hand,



21—Fluted round column, from rock-cut temple among the ruins of Talmis, on the upper Nile. (From Prisse.)

22—Reeded column with lotus bud capital of the Nineteenth Dynasty at Thebes. (From Prisse.)

the exterior of a great Egyptian building was a continuous wall, usually built with a batter (see Figs. 14 and 20), and covered whenever possible with sculptured and painted decoration, nearly as shown in Fig. 20.

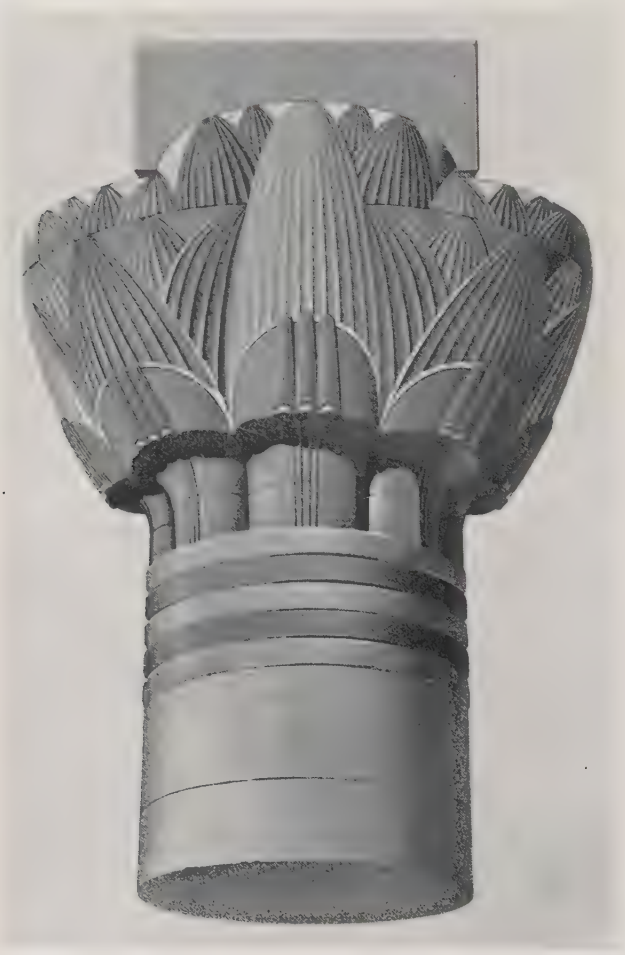
We have no colonnades of entrance, exterior porticos and the like,

23—Capital of column, studied from lotus stalks and flowers, and painted in bright colours; Island of Philæ. Eighteenth Dynasty. (From Prisse.)

earlier than the Twelfth Dynasty (beginning about 2466, Brugsch; about 2200, Steindorff), and perhaps the earliest are in the open portals of tombs.

The Egyptian development was to be in quite a different direction. Thus Fig. 21 is a column from a speos or rock-tomb of the Nine-

teenth Dynasty. Two such columns carry the roof of the inner chamber, which is about 14 feet by 35 feet; the columns themselves being 40 inches in diameter, and each having four upright tablets covered with hieroglyphics, and twenty shallow channels in groups of five each. The general shape is perfectly cylindrical, even the tablets with the



24—Capital of column, studied from the lotus flower and its sheathing leaves, painted in bright colours; in the Ramesseum, Thebes. Eighteenth Dynasty. (From Prisse.)

inscriptions taking the curve. This would seem a direct result of the eight-sided and sixteen-sided columns at Beni-Hasan and others like them; but the development of columnar architecture was not to be carried much farther in that way. Fig. 22 is a column of the Eighteenth Dynasty which may be thought to resemble a bundle of lotus stalks or

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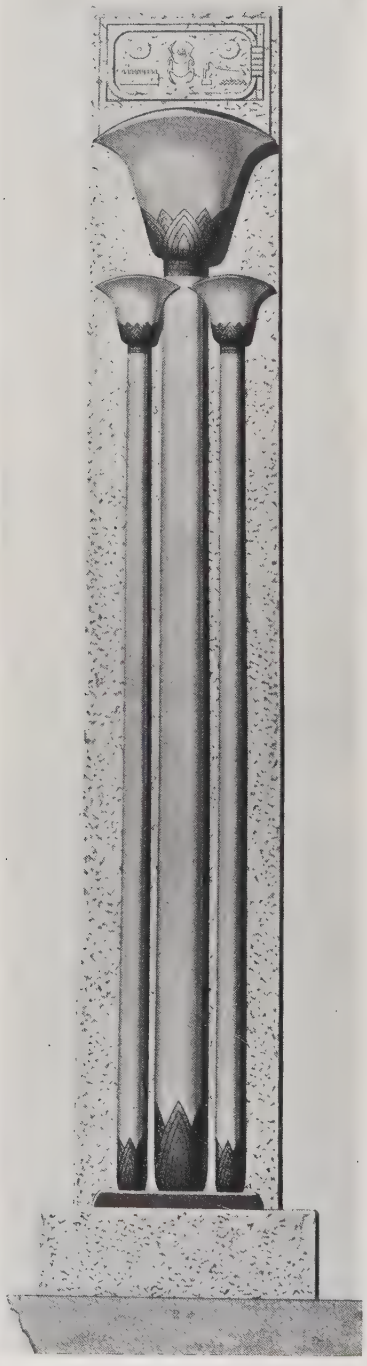
other reeds with the capital formed of their blossoms. The bell-shaped capitals of Karnak and their peculiar shafts have been shown in Figs. 18 and 19, and a peculiar capital of the Eighteenth Dynasty is shown in Fig. 23, and another of the same approximate epoch in Fig. 24; and in each of these the vegetable origin of the decoration is evident. Col-

25—Part of open colonnade, Temple at Esneh, Ptolemaic period. (From photo.)

umns of a later period, and which we associate with the Ptolemaic kings are exemplified by Fig. 25. These are from the Temple of Esneh, on the left bank of the Nile above (south of) the ruins of Thebes. The building is associated with the Greek princes of Egypt and also with the Roman emperors of the first century, but the columns are



26—Square pillar, sculptured with stalks and blossoms of lotus; granite, the reliefs painted in bright colours. At Karnak. (From Prisse.)

probably of the earlier period, about 280 B.C. The great vestibule of which the colonnade forms one side is more than 50 feet deep, so that the columns and capitals are relieved against great shadows. The shafts are 6 feet thick at the top.

The common use of these richly sculptured shafts, painted in brilliant colours, is contemporaneous with the use of rectangular piers adorned with relief sculpture of great emphasis and effect. Thus Fig. 26 shows a pillar of the Eighteenth Dynasty adorned with lotus stalks in high relief on two of the faces; and in the time of the Ptolemies a nearly square pillar was adorned with heads of Hathor in the capital, and, above the head on each side, a suggestion of a shrine; while what may be called the shaft is sculptured into a suggestion of a cylinder with four projecting spurs filling up the original square form of the monolith (see Fig. 31). Such pillars as this are used as parastades or antæ with round columns between them.

It has been thought that the shadowy interior of a hypostyle hall or a great vestibule leading to such a hall is the most approved effort—the most careful study—of the Egyptian architecture; but, with the Eighteenth Dynasty, there come to our knowledge magnificent open courts. The temple given in Fig. 14 is that of the god Khunsu at Karnak; and Fig. 27 gives the northwestern corner of the first great court of this temple, with a

double range of lotiform columns, each supporting a square abacus which in its turn carries the huge blocks of the epistyle. Above this

27—Part of great court, Temple of Khunsu at Karnak. (From photo.) Compare Fig. 14.

member there is merely the great cornice, consisting of a moulded course without ornamentation, and the large cove, so characteristic a feature of Egyptian architecture (see Fig. 12). This, with the

column and the addition of a very slight and simple base block under the shaft of the column, is the whole Order. The thick-set ornamentation in concavo-convex sculpture seems to have satisfied the mind of the designer so far as the smaller details of his composition were con-

28—Part of second court of Medinet-Habou. (From photo.) Compare Fig. 30.

cerned. The Greek artist (see Book III) abandoned at an early time such surface decoration, which indeed was destined to affect Asia far more than Europe.

Fig. 28 shows the second court of the great Temple at Medinet-Habou. The round shafts lying on the ground are from the ruins of a mediæval building, formerly set up in that court, which is about 81 by 105 feet in clear dimensions inside of the rows of columns and square pillars. In the photograph, we are looking nearly west. The square piers on the right are what are known as Osiride or Osiriac pillars, because each square mass was adorned by a sculptured figure of Osiris projecting boldly into the open space of the court.

In the court of Medinet-Habou these Osiriac statues have been broken away, as if by deliberate violence; and Fig. 29 will give some

idea of their effect, although this treatment, taken from the Ramesseum, otherwise called the Memnonium, at Thebes, was less rich and varied than was that of Medinet-Habou, where the north-western and south-eastern porticos are composed of these piers. The north-eastern and south-western porticos are composed of five lotiform columns each.

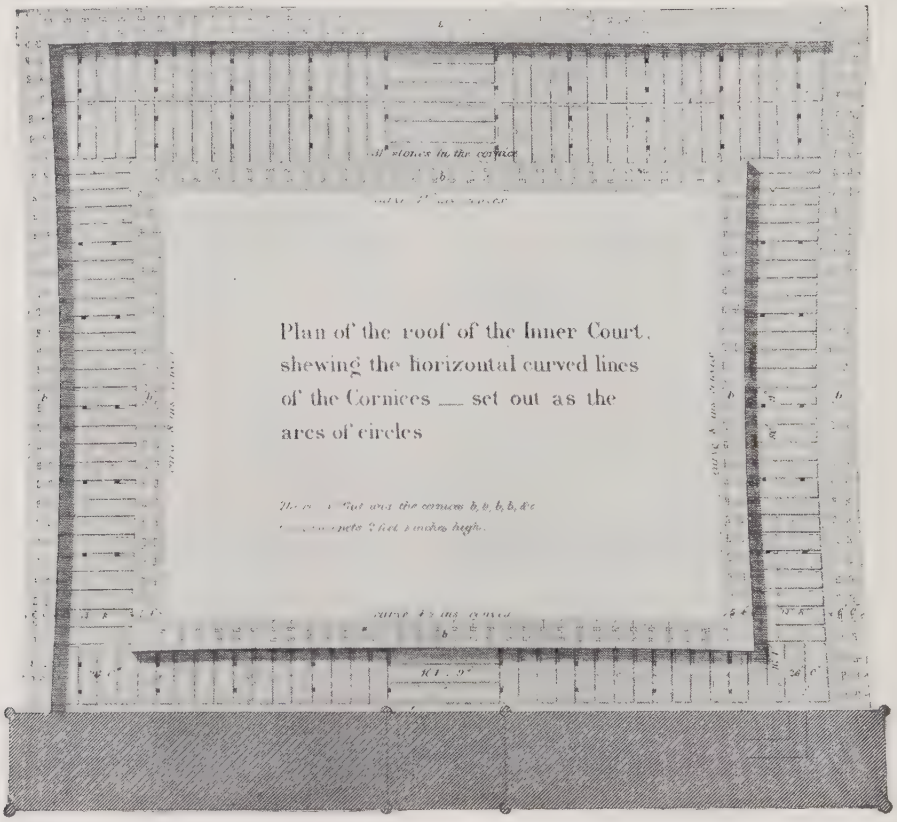
This is the court which has been cited by those writers who have dwelt upon peculiar refinements of architecture in which curves take the place of straight lines, as will be found often in the Greek Temple (see Book III), and again, very frequently, in the Romanesque and Gothic architecture of Europe. The horizontal plan of the members above the columns is not a perfect rectangle, because each of the four bounding lines is curved convexly toward the court.

In Fig. 30 the greatest length of the court is shown to be, within the line of the cornice, 104 feet 9 inches, by 80 feet 9 inches in its greatest

29—Osiriac statues in second court of Ramesseum, Thebes. Nineteenth Dynasty. (From photo.)

width. Now it was ascertained by careful measurements, made by John Pennethorne in 1834, that the front edge of each cornice curved toward the court horizontally, and that the stones of the cornice and of the flat roof behind it were set out and cut with a special

reference to that horizontal curvature. The plan is figured, but it is important to remark that the curvature of the short sides is 8 inches



30—Second court of temple at Medinet-Habou. (From Pennethorne.) Compare Fig. 28.

on a chord of a little over 80 feet, whereas the curvature of the long side is very much less. The two radii of curvature are stated by Pennethorne to be 971 feet and 3,657 feet respectively.

CHAPTER III

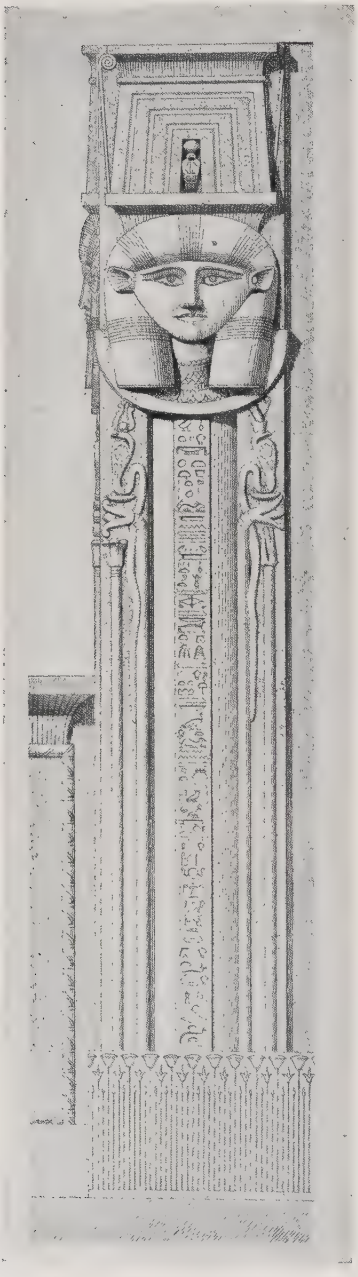
SCULPTURE AND SURFACE DECORATION

THE relation in Egyptian art of figure sculpture to the general design of building is singularly close. This is architectural sculpture, properly so called; much more rare in Greek work of the fine time, and almost unknown in the magnificent art of the Romans, as we find it preserved for us. The Egyptians cultivated it to the full and with wonderful success; but the tendency of architectural art as it travelled westward was toward a more severe and therefore more independent character of design, in architecture and in sculpture alike.

In connection with Figs. 28 and 29 there was mention of Osiriac pillars; and in Fig. 31 there is shown a pillar with the goddess-head, the Hathor-head, which is identified with late Egyptian art. This pillar is taken from the little temple of Der-el-Medineh, among the ruins of ancient Thebes, on the left bank of the Nile.

Another means of utilising sculpture of the human subject was found in the statues of kings—ceremonial statues rather than faithful portraits, but composed with a presumably accurate study of the features of the prince to whom honor was done. Of the Nineteenth Dynasty (beginning about 1400, Brugsch; 1350, Steindorff) are the rock-cut temples at Abu-Simbel, far up the Nile, and in the tropical region just north of the second cataract. The conquests of Rameses II had extended as far south as that, and he seems to have wrought these great works in the rock as a station mark, to show how greatly he had enlarged the boundaries of his kingdom. Fig. 32 shows the front of the greater temple at Abu-Simbel, for this consists of nothing more than a smoothed, sloping face cut into the irregular limestone hillside, while four colossal statues are wrought in the living rock which has not been disturbed. These four colossi are, in a way, fac-

similes of one another; that is to say, they are all portraits of the king, in the same pose and with the same treatment, though delicate and subtile distinctions are traceable by the student of sculpture. They would, if standing, be about 90 feet high. Their scale is rather closely given in the photograph (Fig. 32) by the human figures in the foreground, though one of these is squatting on the instep of the statue on the left, and the other two are not seen at their full height. The smaller, though still colossal, statue in the square niche above the doorway is that of the sun-god, Horus, and between the legs of the huge seated colossi are many erect statues, much larger than life, all of which are probably portraits of members of the royal family. The distinction apparent in this way is of extraordinary interest, because the smaller colossi can hardly be thought to affect favourably the architectural design, and even the Horus statue above the doorway is not altogether well adapted to the adornment of the façade; while the gigantic statues of the king create that façade—make it up, indeed—form its single motive, its reason for being. It is as if the artist had said to his lord, or to himself: "I will make a temple-front out of vast images of King Rameses, with just so much background as they need to set off their bulk and to enhance their dignity." We see, then, that he has carried out the idea of an architectural ordinance by the strange row of baboons, much conventionalised, and carved in the way of a decorative frieze at the very top of the



31—Square pillar with Hathor head supporting shrine, Temple at Derel - Medineh. Ptolemaic epoch. (From Prisse.)

32—Great Temple of Abu-Simbel: the rock-cut façade with colossi. (From photo.)

rock-hewn frontispiece; while beneath these, on the smooth face of the limestone, are hieroglyphs in two rows, on which it appears that the cartouche of King Rameses is represented many times, though with slight diversities of treatment. Concavo-convex sculptures fill some of the blank spaces of the rock, but there has been a greater willingness to leave smooth and bare surfaces than is commonly found in buildings of this time. Probably the artist felt that the hill rising above and behind his sculpture would, by its very irregularity and play

33—Cœlanaglyphic relief, on great pylon, Temple of Denderah. Ptolemaic period. (From photo.)

of light and shade, dwarf the sculpture unless that were well set off by smoothed surfaces of sunlit stone.

This feeling for the contrast of refined sculpture with blank surfaces is not universally shown in Egyptian work. The great pylons, and in some cases the outer walls of the hypostyle halls and sanctuaries, are thickly covered with sculpture, once painted in brilliant colours. Fig. 33 shows a part of the wall of the building at Denderah called the Temple of Hathor; and the sculpture upon it is carried out according to that system of concavo-convex relief frequently alluded to in this

chapter. The artist sinks his incised outlines, leaving the intended relief, exactly as if he were about to cut away or lower the background; but stops short of that. The figure in relief occupies, then, a sunken panel as large as itself and no larger; or in other words, the figure is outlined by a deep groove, and its roundness and flatness, its masses and its details are still lower than the original surface of the stone wall, however richly they may be varied as far as the figure itself is concerned. This kind of sculpture is interspersed, however, with other incised designs which are sunk very deeply, while the background or bottom of each separate sinking is in but slight relief. Thus in the hieroglyphic inscriptions like those on the great obelisk still standing at Luxor

34—Detail of obelisk at Luxor. (From photo.)

(Fig. 34), the hawk, the ibis and the ocelot are shown as deeply incised and with the markings of body and head very slightly relieved from what would otherwise be a flat bottom of the sinking.

This matter of hieroglyphic writing is of great influence upon the decorative effect of Egyptian buildings. It can be seen in Fig. 28, and

is shown on a larger scale in Fig. 33; but the form in which it is most impressive to the modern student is in the inscription on one of the great obelisks: as shown in Fig. 34. These strange monuments are commonly set up in pairs, at the left hand and right hand of an outer gateway, as of

35—General view of obelisk at Luxor. Behind the obelisk is seen the northernmost pylon of the Temple of Luxor. (From photo.)

a palace or temple. Their apparent purpose is to carry on each face a large vertical inscription; but we are not to overlook the very ancient and long lingering practice of setting up a column or pillar at each side of the outer door of a dwelling-house—a practice whose origin and significance are not known. Fig. 35 shows one of the two obelisks at Luxor, which once flanked the southern entrance; the other being now in the Place de la Concorde, Paris. The one shown in Fig. 35 is more than 80 feet high; but nearly half of this height is concealed by rubbish, as indicated by the seated colossal statue of which about 18 feet in height is visible, while nearly 30 feet is hidden. In this obelisk, as very frequently in those put up by earlier kings, other inscriptions have been crowded in upon those of the first builder. The middle row from top to bottom is, in such cases, the legend of the king who put

the obelisk in place; others the work of his successors. Fig. 36 shows the great obelisk at Heliopolis. This obelisk has never been reworked, probably because the city and temple, now wholly deserted and lost, were partially abandoned at a very early time. This obelisk, about 60 feet high, is covered for nearly one-third of its height by the newly made soil left from inundations.

36—Obelisk at Heliopolis. Erected during the Twelfth Dynasty. Made of red granite and originally capped with copper. (From photo.)

Sculptured and painted ornament of surfaces was universal throughout the Middle Empire, and this decoration included an unusually large amount of significant painting and carving. Studies of landscape, plant form, animal form, out-of-door life with agriculture, the care of cattle, hunting and fishing, war and the kingly triumphs; indoor life with the picturing of splendid objects and rich costume, all enter into this great scheme of colour decoration, flat or in low relief. There was also an extraordinary display of purely conventional patterns, scrolls, rosettes, frets, meanders, zig-zags, and checkers, in bright and pure colours which in the tomb chambers have often preserved their full effect, in a very surprising way. The most brilliant and to modern eyes most charming of these painted patterns are the ceilings of vestibules and chambers in the temples.

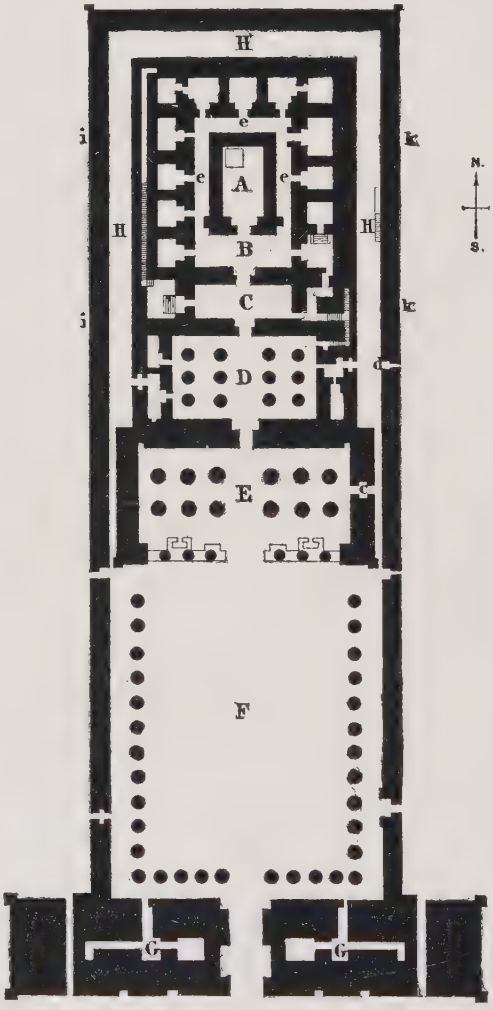
When workmen not possessing steel tools have a broad surface of stone to adorn they are naturally led to cutting into its surface with rather slight and feebly wrought grooves, with soft rounded edges and a general appearance of having been slowly worn and rubbed into shape rather than sharply and neatly cut. This work is, however, easy to treat in an artistic way. The soft grooves are as capable of graceful and suggestive curves, or vigorous combinations of straight and broken lines, as if they had been cut with the sharp modern chisel. In this way admirable patterns were brought into being, and as the centuries went by these were translated into terms of painting and used everywhere with great freedom. In the magnificent folios of Prisse,[13] these designs are given sometimes on a large scale and always with great beauty of colour and with admitted accuracy. It is most interesting to see how these purely inventive designs gradually pass into a certain rendering of vegetable and animal form, retaining much formality as of a carefully designed pattern but still expressive of the facts of life. A design given by Prisse of scarabs with spread wings and still another of wild geese, both reproduced in "A Study of the Artist's Way of Working," Vol. II, p. 395, and the painting of the symbolical vulture on the lintels of doors, are admirable lessons in the art of treating natural forms in a decorative way.

The vast resources of Egyptian architecture, and its strength as a system of design, are shown in its hold upon all the dwellers in the Nile Valley for at least forty-five centuries. In 525 B.C. came the Persian armies under Cambyses, and the country became a province. The country was free for sixty years in the fifth century, and was again subjected to the Persian king. In 332 B.C. Alexander the Great took possession of Egypt, absorbing in himself the previous rule of the Persian monarch. After Alexander's death came the Ptolemies, and this semi-Greek dynasty ruled Egypt until 30 B.C. For over two centuries, then, of historic time, an Asiatic overlord controlled the country; and for nearly three hundred years more, or as long as from the first European settlement in the United States to the present day, a powerful late-Greek influence dominated Egypt; and yet the new

[13] Histoire de l'Art Egyptien d'après les Monuments, depuis les Temps les plus reculés jusqu'à la domination romaine. Par Prisse d'Avennes, Paris 1878. See the plates in Vol. I, which would be, if numbered, 28 to 34 inclusive. See also the plate next following for conventionalized representation of life; cf. the *Notices Descriptives* in the volume of text.

buildings of this period were what the earlier structures had been, in everything except minute refinements of style.

Fig. 37 is a plan of the great temple, at Edfu, built under Ptolemy Euergetes (247–222 B.C.). It is to modern students one of the most important of the temples in spite of its late date, because it was built of admirable sandstone, very permanent, and retaining its sculptures sharp-edged and perfect, and because its very excellence as a structure and its unruined condition have defended it against the treatment of it as a quarry. The houses of the people were built upon it, and against its outer walls and within its court-yard; but when these were cleared away in the middle of the nineteenth century, the building was left in the admirable condition in which we find it to-day. There is nothing unexpected in the disposition of the structure, except that there is an open colonnade fronting on the great court, *F*, and forming the only southern face of the great hall, *E*; and the free passage, *H*, between the bounding wall and the apartments, not commonly found in temples. Fig. 40 shows this disposition. The pylon, *G*, is not very unlike those of centuries earlier, the arrangement is the same; the singular upright channels, with vertical rear walls and (as we have learned from wall paintings) intended for masts



37—Plan of Temple of Horus at Edfu. A, Adyton, or sanctuary, or sekos, isolated by corridor ee. B, C, D, prosekos halls. D, great vestibule, called in the inscription Festal Hall. E, hypostyle hall with open portico. F, great court 138 x 155 feet. G, great pylon with main entrance doorway. c, d, side doorways; ii, kk, outer wall enclosing H, outer corridor. (From Baedeker.)

from which banners might float on feast-days, are the same; the concavo-convex sculpture is of nearly the old character; and the emblematic crowns of Upper and of Lower Egypt are as they were in the great days of the independent kingdom. Fig. 38 shows from the south-west the great pylon. Fig. 39 is a view taken from the top of that pylon, looking almost exactly northward, for this temple, unlike the older ones, is carefully planned upon a north-and-south axis. Here, then, is a type of the later temple, that with the open

38—Edfu from the south-west; the great Pylon, Temple of Horus. (From photo.)

portico affording entrance to the great vestibule, larger than the hypostyle hall to which it leads, and which in its turn leads to the more sacred precincts. The radical nature of this change in the architectural conception of a sacred edifice deserves our closest attention. It is hardly to be thought that this is the result of Grecian influence over the Egyptian builders, the splendid effect of a colonnade with the shadowy spaces behind it having impressed itself upon the builders of the Ptolemaic period. From this point of view the new feature of the open portico is much the most important change made in Egyptian architectural design since the great type of the stone-built

temple was fixed in the Twelfth Dynasty. Here also is the best preserved of all the Egyptian temples, with its flat roof of massive stone, homogeneous and showing both faces of the slabs which compose it—the ceiling below serving a decorative purpose, a flat terrace roof above serving many purposes, and even serving as a new site upon which buildings could be raised. The high wall which surrounds like a parapet the flat roof over the more secret apartments at the north end should be noted, because at Denderah (see Fig. 42) that wall serves a distinct purpose. Fig. 40 shows the walls and roofs of Edfu from the opposite point of view to that taken in Fig. 39. In this we are looking nearly southward, the massive wall at our feet being the outer bounding wall at the far north-eastern corner (see plan, Fig. 37), the wall at our right, covered with sculpture, enclosing the chambers of the sanctuary, the slightly wider and higher mass beyond standing for the great vestibule with the colonnade (Fig. 39), and the great pylon coming dark against the sky. On the right, then, is the wall which surrounds the sacred enclosure, and rising high above its roof, as noted above. The huge gargoyles or water-spouts along the front of this wall in Fig. 40 mark the level of the actual flat roof behind. The cornice with its great hollow cove cut in upright-standing stones (compare Figs. 39 and 40) has now lost altogether its original character, as indicated by Fig. 12.

The temple at Denderah is Ptolemaic also, but of a later date. It may be identified with the later Greek and the earlier Roman dominion; for in the year 30 B.C. Octavius Cæsar finally brought Egypt under the Roman imperial domination, and even a show of independence came to an end. Denderah is not nearly as well preserved, nor is it quite as fine a building, as Edfu, but it contains some interesting features. Thus, the Hathor column, which was developed out of the Hathor pier of earlier dynasties, and which reaches its culmination under the Ptolemies, is well seen in Fig. 41, one of the columns of the great hall. The faces have been obliterated with hammers by Christian or Mohammedan zealots. More interesting still in this temple is the presence on the roof of the open pavilion shown in Fig. 42. There are two staircases plainly enough visible in the plan (Fig. 37) of the Edfu Temple, and in the Denderah Temple there are two in similar situations. Ascending the roof by these, in the extreme south-western corner (for this temple is set facing north by east, in almost direct contradiction to that at Edfu) is the pavilion in question. It has

39—Temple of Edfu, from top of great Pylon, looking north. (From photo.)

twelve Hathor columns, and was once covered by a roof of stone slabs in the usual fashion, but this has disappeared.

Finally, of completely Roman time and influence is the famous and beautiful group of buildings at Philæ, an island in the Nile, just above the first cataract. The view (Fig. 43) is taken from the south-west and from the neighbouring island of Bigeh. The long solid wall seen at the right, and half screening a row of highly adorned columns, marks the

40—Temple of Edfu from north, pylon in the distance. (From photo.)

great outer court or enclosure of the Temple of Isis. This outer court is a real dromos,[14] by which the visitor landing at the southernmost point of the island would approach the great pylon between stately colonnades. The great pylon, then, is seen farther to the left, and beyond that the row of columns marks the eastern site of the inner court of the temple. From this court the second pylon was approached, but of this pylon only a small part remains, for the building seen partly in the rear of the first pylon is another and a minor structure. All the

[14] Dromos: primarily a running-ground, a race-course for pedestrians; hence an avenue leading to a building, especially if treated architecturally.

sanctuary and its neighbouring rooms and passages are now a ruinous pile of squared stones. The outermost (southerly) court is however a most attractive architectural study. Fig. 44 gives a long colonnade, as seen from the landing-place at the extreme southern point of the island.

41—Hathor column, the capital supporting a shrine; at Temple of Denderah. (From photo.)

Our pursuit of Egyptian architectural art through the centuries may certainly close with a glance at that beautiful pavilion of fourteen columns in its outer perimeter which stands on the easternmost bank of the island of Philæ and close upon the main stream of the Nile. This pavilion was built under Nerva, master of the Roman world from 96 B.C., but the brevity of his reign prevented its completion, and the cartouches of other and later Roman princes accompany his own. Probably the building was completed during the long and glorious reign of Trajan. There are later buildings still preserving the Egyptian character, but no one of them is quite as attractive as this one.

It is with great regret that I abandon the attempt to treat domestic

architecture in Book I. There are many records in the painted and in the sculptured monuments by means of which the student of manners and customs may satisfy himself as to the luxury and abundance of the life of the nobility, but nowhere is the architectural character of their residences made clear. Many paintings have been reproduced, as in the different books named in the footnotes to this chapter: and many ingenious conjectural reconstructions of the houses and gardens

42—Pavilion, built upon roof of inner apartments, Temple of Denderah. (From photo.)

have been offered; but still the architectural character of the private house remains unknown to us—only to be restored in guesses and in the way of historical romance. There are also many vestiges of the humbler life of the people: and yet no excavator has unearthed for us any ruins from which a dwelling can be reconstituted. The sarcophagus (Fig. 1) and other existing sarcophagi, some of which have been published, reproduce the wood-framing of certain pavilions: tomb-walls, as in Fig. 2, repeat that evidence as to structure; but the testimony stops there. There are in the British Museum small models of Egyptian houses to which the student of manners may point, with the certainty of engaging the interest of all his readers or hearers.

Thus, there are given in the history of Egypt by Dr. Budge [15] three photographs of clay models of houses; and in Maspero's excellent handbook [16] a box in the form of a house is given. All these examples are in the British Museum, and the books in which they are reproduced are inexpensive works, within everybody's reach. In Perrot & Chipiez, Vol. I, and in Erman's important treatise,[17] two such models in the Louvre Museum are reproduced. The student of art need not study

43—Island of Philæ, upper Egypt: Buildings of Ptolemaic and Imperial Roman periods. (From photo.)

these models nor the pictures carefully, however, because they are more likely to mislead him as to the actual architectural treatment of the problem than to guide him aright. Suppose that our successors in the occupancy of this planet should set themselves to judge of our domestic architecture by a baby-house which may have been found, with its furniture and dolls. That supposition is not very unlike the fact of any present study based upon these toys of remote antiquity.

[15] A History of Egypt, by E. A. Wallis Budge, Litt.D., D.Lit. Illustrated. London, 1902, vol. ii, p. 143 ff.

[16] L'Archéologie Egyptienne, from the Bibliothèque de l'Enseignement des Beaux-Arts.

[17] Adolf Erman, Ægypten und ægyptisches Leben im Altertum; also, in English, translated by H. M. Tirard, as Life in Ancient Egypt.

In the case of the Grecian house, again, we are in doubt, because there has been no Pompeii for us there; and yet the Grecian house is one theme of a literature which is familiar to all the scholars of Europe. As

44—Outer court, Philæ; colonnade of western side. Ptolemaic period. (From photo.)

to the Egyptian house, there is no literature which helps us to study it aright. And if one desires a more complete explanation of whatever hesitancy a writer on architecture may express in this connection, let him follow the opening chapters of Maspero's admirable little book, and he

will see how even that master of exposition has failed to reach a satisfying conclusion. In Perrot and Chipiez, Vol. I, Fig. 267, is a carefully made drawing of a house with garden and bounding walls; and in Fig. 258 is given that painting in a tomb among the ruins of Thebes which has suggested the restoration. Another and a much more elaborate ancient plan found at Tell-el-Amarna is given in Fig. 259. The absolute hopelessness of drawing safe inferences concerning the architectural character of the building is obvious. To make from a low relief, or a painting, a view in bird's-eye perspective with bounding wall and gateways, showing dwelling-house, garden, and groves, is easy to an imaginative designer; but to express aright the architectural character of the buildings so studied and so sketched is beyond any artist's power. So far as present observation goes, there is no attainable knowledge of the architectural treatment of the Egyptian dwellings.[18]

The military architecture of the Egyptians is known to us by many foundations and ruined walls of cities, including their skilfully disposed gateways, and by two or three isolated fortresses whose external aspect is preserved for a certain height above ground. As the thickness of the city walls was immaterial to builders controlling an indefinitely large force of labourers (the walls of Nekhab are given as 36 feet thick) sun-dried brick might be used even without a facing of harder material. The fortress buildings were built with the lower part of their mass solid, or with retaining walls 13 feet thick, as at Semneh, but with the whole space within filled solid, except where small chambers were reserved in the heart of the huge mass, like the great keeps of mediæval castles described in the second volume. That which is wholly unknown to us is the specially organized method of defence, as by battlements (for which see Roman and mediæval European fortification), or by battlements and machicolations together, as in the European Middle Ages, or by galleries, as in Byzantine walls in Asia as described in Vol. II, or by temporary galleries of wood, as also described in Vol. II. It is in this way that the modern student is dis-

[18] Since reaching this conclusion I have received the latest work on ancient Egypt: The History of Egypt, by Dr. Breasted, and I find, p. 200, the following passage referring to the Middle Kingdom: "The domestic architecture has also completely perished. From the plan of the town which Petrie found by the pyramid of Sesostris II, at Illahun (Map 1) we gain only an impression of the contracted quarters in which the workmen of the time were obliged to live, but of the houses of the rich, in which there was opportunity for architectural effect, we have very little knowledge."

appointed when he visits this or that Italian town on the strength of the statement that the walls of the town remain complete. He finds that the solid wall 8 feet thick and 30 feet high is in place; but that every characteristic feature of mediæval defence has gone from it, leaving a wall suggestive of a wholly peaceful enclosure; and he finds that the specially interesting gateways are wholly dismantled; nothing but their plan remaining partly traceable. Of the mediæval system, indeed, there remains in one town or one castle what is missing from another; but in Egypt there remains no trace of the carefully planned work of the military engineer except of the gateways of a few fortified towns.

Portrait head of Queen Taya (Tiy or Tyi), wife of Amenhotep III, fifteenth century B.C. Now in the Cairo Museum. (From photo.)

BOOK II.—WESTERN ASIA TO 300 B.C.

CHAPTER I

CHALDEA AND ASSYRIA

THE ancient kingdom of Chaldea occupied the lower valley of the Tigris and Euphrates as it existed in antiquity. It has long been known that, at the time of Chaldean power, the Persian Gulf extended northward, much more than a hundred miles beyond its present upper end, and that the great rivers Euphrates and Tigris were separate rivers and did not, as at present, meet in one bed many miles above their common mouth. The ancient southern boundary was then the sea far above Bussorah (Bozra), as it was before the deposits of the Tigris had extended the Delta far to the southward. From this line north-westward, the country subject to the Chaldean monarchs occupied all the broad valley from the mountains on the Persian frontier westward to the Syrian Desert, and extended much farther north than Bagdad. On the line of the Tigris the boundary between Chaldea and the Assyrian Empire was evidently in dispute from a time, about 1100, when the Assyrian kingdom had become formidable, to 650 B.C. About 720, and again about 700 B.C., the warlike Assyrian monarchy conquered the older state; nor was this northern invasion repelled till about 620. The exact north-western boundary of Chaldea, therefore, cannot be fixed: it must have fluctuated between 33° and 36° north latitude.

The Chaldean power in some form reaches back into as yet undated antiquity. Its earliest known sovereigns are the near contemporaries of the earliest known Egyptian sovereigns —the fourth and even the fifth millennium B.C. forming the space of time within which we must look for these reigns; while the Assyrian dynasty is not of such ancient date; its separate power hardly recognisable before 1300 B.C. The whole flat land between the two great rivers (Mesopotamia in the proper sense of the word), and on either side of them—

eastward from the Tigris and westward from the Euphrates—was subject to the kings who reigned at different times in the different cities known to us as Sippar, Nippur, Barzipa, Isin, Larsa, and Sirpurla or Lagas. More famous than any of these cities, though less ancient than some, was Babylon, and this because it was the capital of the country at the time when the attention of Greek scholars was drawn to it most strongly. Herodotus, writing about 450 B.C., describes Babylon at great length, but the city that he had seen was a wholly new Babylon, built up afresh after the destruction by the Assyrians about 695 B.C. The books of the Old Testament, whether put into their present shape earlier than the time of Herodotus or not, deal also with that Babylon of the later rebuilding, considering it as the chief centre of civilization in Asia. The actual facts of sovereignty and frontier, and the propriety of speaking of the realm on the two great rivers as Babylonia, cannot as yet be determined.

In the matter of buildings, one marked characteristic is to be found in all the region on the Tigris or Euphrates, alike the southern part called Babylonia, and the northern part, or Assyria; the inhabitants were compelled, equally, to use the clay and the bitumen of the soil for their chief building materials. In Assyria there was an independent supply of a soft stone, a gypsum of the kind known as alabaster; but in Babylonia even that seems to have been unknown. Some stones had to be brought from Persia, some from the mountains of Armenia, 400 miles northward from Babylon, and timber of durable quality and of fair size had to be brought nearly as far; so that both these materials were practically out of use except for the decorative treatment of very costly royal buildings. If wood were to be brought across Syria to the stream of the Euphrates, it was no more costly to bring the splendid cedar of the Lebanon mountains than to bring ordinary hard wood; if stone were to be brought, that which was precious and semi-precious cost no more labor and time in transportation than the roughest material. Hence it is that the buildings of the flat country, from remote times, were carried out in brick, generally undried, sometimes dried in the sun, far more rarely baked or fired; while the materials which in other lands formed the structure were used for adornment alone.

The great buildings of Babylonia, or Chaldea, are built of unbaked brick almost exclusively. Not only the walls of a palace, but the whole of the vast, terrace-like structure on which it was raised, were built up of the viscous and adhesive soil itself; but this not according to the

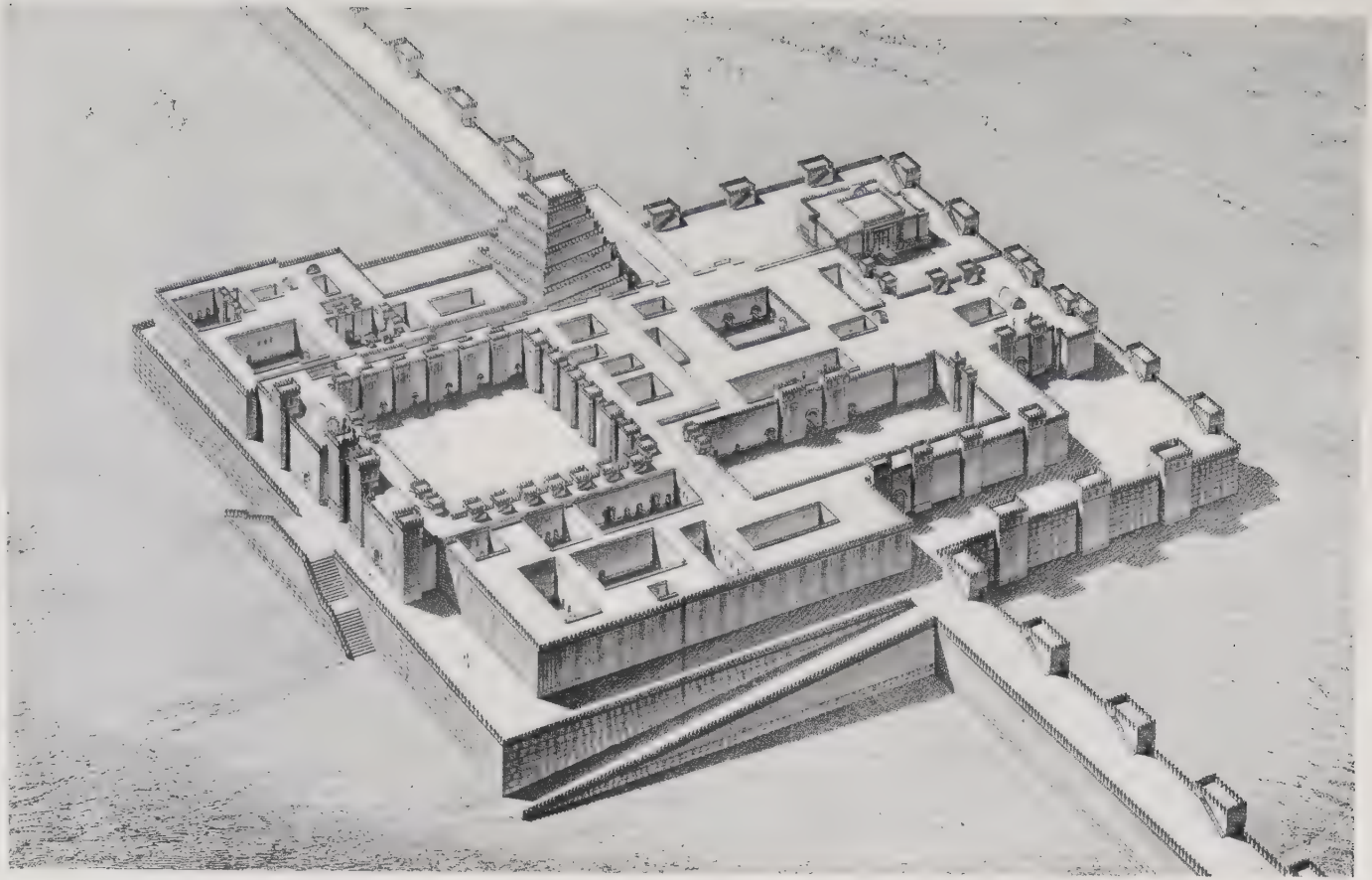
monolithic plan or in the fashion which we call pisé, but in bricks of from 12 to 16 inches square and from 2 to 4 inches thick, roughly speaking. The apparent reason for this was the practical impossibility of getting material of which to make that casing or boxing which is necessary for the carrying out of a monolithic structure. It was really far easier to mould the millions of bricks of a given size and bring them to the building-site before they dried, than it was to make a case or mould upon that site itself, upon the very base of the wall, to receive and to shape a larger mass of the material. We are to imagine, then, a broad course of these large bricks, laid side by side, flatwise, marking the whole thickness of the wall at its beginning. This layer would be partly dried in a very short time under the hot sun of that country. Another layer would be put upon this, and its own abundance of moisture would suffice to fix the bricks of this layer to those below. This process has been actually identified in the ruined walls which have been examined of late years. Bricks dried in the sun before being placed were laid in rather thin beds of bitumen or of bituminous earth, this serving merely to supply that moisture which the brick itself had lost in desiccation. As for hard-baked bricks, they were as scarce as stone and nearly as costly, and this because of the extreme difficulty of gathering enough combustible matter to fire them. "The grass of the field" in some of its forms—reeds and rushes, rice straw, the wild growth of a marshy region—these, and these alone, with dung, were available as strong-burning fuel. Accordingly we find from early times sewers, drains, or bricked-up water-courses lined with fired brick, and the buildings of a city often faced with them, but this material used in hardly any other way; and the farther south we go the less trace is there of burned bricks.

Under these conditions it is evident that architecture in the sense in which it is found in Egypt, shown in the photographs of Book I, could not exist. The building even of a palace or a temple would naturally be devoid of those refinements of form and those added details which go to make up the architectural character of buildings in a country, rich in stone like Egypt, or well supplied with stone and timber, as ancient Greece or Italy. There would be no overhanging cornices, no colonnades forming the whole front of the structure, no external porches, balconies, loggie, and the like; most of all, no system of colonnades, as in Greece and Sicily (see Book III), but everywhere large, smooth wall faces, sloping or vertical; and with these, flat

terrace roofs carried on heavy timbers brought from afar at great cost; or on palm-trunks in bundles, strapped firmly together with the fibre of indigenous plants; or finally, by brick vaults which, among an ingenious people, would speedily take form and become the most simple, as they are the most permanent kind of roof. All this, though put here as conjectural, is verified by the discoveries.

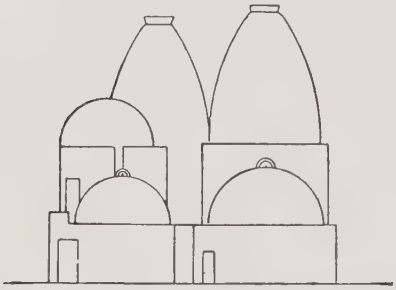
Fig. 45 is a proposed restoration by the architect Charles Chipiez of an Assyrian palace-temple, and this, though confessedly not verifiable in every detail, but rather a description by one who has studied many ruined buildings and who is applying to his ideal what he has learned from many discoveries, is yet of use as being the best approach we can make to the mental image of an ancient structure on the Mesopotamian plain. In this figure are seen the outer wall of the city stretching away from the upper left-hand to the lower right-hand corner, the great platform of the palace having the same height as that city wall and reached from the plain by long, gently sloping ramps and a double stair, the separate buildings of the palace and the Zigurat or pyramidal temple rising above this platform. The palace rooms open upon twenty-one courts of different sizes, besides that distant corner where the great platform is unoccupied except by a separate pavilion. The greater part of the continuous flat roof of all these palace buildings is assumed to have been carried on brick vaults. We may assume the height of the city wall and of the great terrace at 70 feet: and all this as built solidly with squared bricks, generally in a pasty state. There are no deep foundation-trenches, nor even anything specially built as a foundation: the broad, soft, flat bottom of the wall or pier is set, sometimes upon a single course of stone, sometimes directly upon the ground, and the undisturbed alluvial soil, itself hardened into the condition of sun-dried brick, carries it easily. The soft brick of the wall-faces is protected from rain by some plastering; even lime mortar has been found in use. The rooms of a residence, or, in a palace, the larger halls, are alike narrow in proportion to their length. All this is demonstrated by the excavations: and the accepted theory as to the roofing is that these narrow rooms were vaulted with tunnel vaults.

The matter of brick vaulting requires especial consideration. Something like it was found to exist in Egypt, but on a very small scale, rarely used except for narrow underground drains, and occupying no place at all in the monumental architecture of the land. In Babylonia, however, it was used undoubtedly for important structures, and in two



45—Restored view of Palace with Zigurat, and fortified outer wall of city, by Charles Chipiez, from survey of Victor Place. (From P. and Ch., Vol. II.)

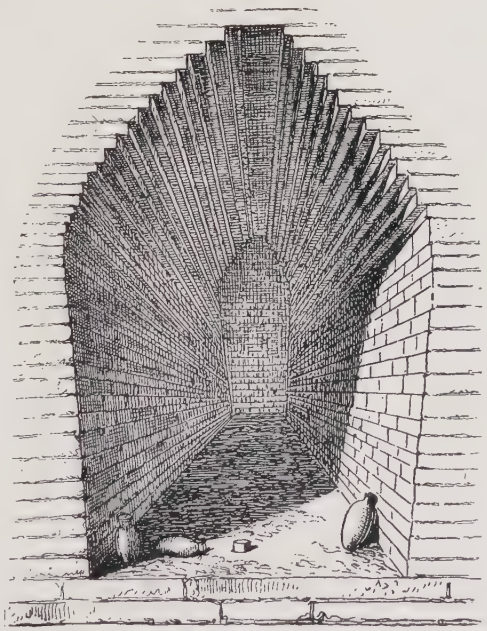
forms, first as the round cupola, the easiest of all vaults to build; secondly and more often, in the form of long tunnel vaults. No cupolas have been found: but the bas-reliefs show them unmistakably (see Fig. 46). The building of a cupola in brick or in stone is a simple matter, whether with flat-bedded courses, or in true arched construction by means of wedge-shaped solids. The lower part of the round shell will stand alone; it can be built up like a round tower, and this to a considerable height if the material is a viscous brick, each course of which will cling to its neighbour, or a rough brick, whether laid up with some kind of mortar or not. All that is needed is something to fix the curve —a rounded edge, as of a board, of a plate of metal, or of a light frame— and this to serve as a guide for the mason. A cupola may be built by means of mere corbelling, and of this the very best instances are to be found among the stone-building nations (see Book III, and especially Figs. 82 and 84). Again it may be wholly built in true arch construction, as explained in the next paragraph. The only question is as to the supporting of the upper courses from below, until it is complete: for in a country like Mesopotamia there is no wood of which to build centres. If we take a circular room, it is about the easiest thing in all architectural work to cover it with a cupola; but to roof a square room in that way requires consideration. This can be done by means of pendentives, that is to say, portions of a vault which lead up from the square to the circle, as shown in many parts of this work, as in the discussion of Byzantine and Renaissance churches. When the building is on a small scale, a simple segmental or flat arch may be sprung across diagonally from one side of the square to the adjacent side, thus providing an octagonal base from which a dome of circular plan may easily spring; or, finally, a solid lintel of stone or wood may be laid across to replace the arch. There are no cupolas at all identified, as yet, among the Chaldean or Assyrian buildings, and therefore we are not informed as to the processes employed. For a fuller treatment of this subject see Chapter II of this Book.



46—Representation in Assyrian relief-sculpture of buildings roofed with cupolas. (From Gosset.)

The wagon vault or tunnel vault is, however, the important thing

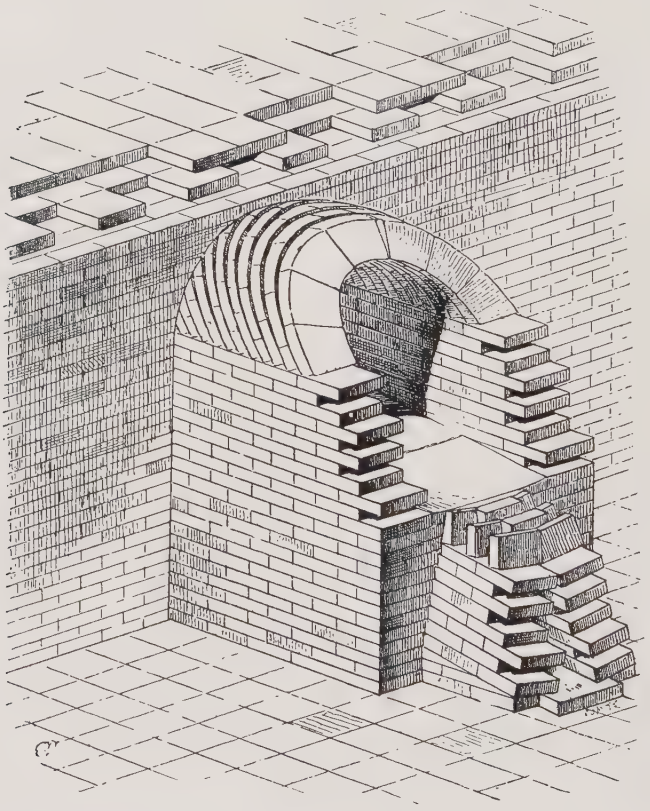
in Assyrian building, and it appears that in the earlier Babylonian work also this form is that which has the first importance. This wagon vault may be replaced, however, by just such a corbelled structure as we found existing in Egypt, in the Grand Gallery of the Great Pyramid and elsewhere. Fig. 47 shows such a pseudo-vault made by corbelling, such as those found in the brick-built masses of Mesopotamia. To roof these long and narrow galleries with real vaulting would not puzzle the modern builder for a moment; but the question is how these ancient workmen, who are assumed to have had no wood of solid texture and no skilled masters in the art of building, set themselves to the task. The modern workman would provide immediately a wooden centring, shaped with mathematical accuracy, in which the shape of the vault would be built in convex form—the upper face being a model, an exact counterpart, of the concave under surface which he wishes to build. Upon this centring the bricks or stones, with strong mortar, would be put in according to almost any plan—the adhesiveness of the mortar would prevent mischief when the centring was "struck," and the vaulting, unless of very great span, would stand of itself. The exceptions are those in which the separate solids which make up the vault are carefully cut and shaped; and this way of building is shown very fully in Book V, Chapter I, where Roman vaulting in solid stone is described. The Romans, also, needed the wooden centring, but their ships made regular voyages everywhere on the Mediterranean Sea, and where there were no forests to provide timber it was still easy to supply the need. The Chaldean, however, imagined a way of building by means of which he could proceed without the expense and trouble of providing wooden centring. This plan of his, well explained fifty years ago in connection



47—Corbelled roofing as practised in Syria. (From P. and Ch., Vol. II.)

with Byzantine building, has now been identified as having existed during these long centuries of pre-classic work in Asia.

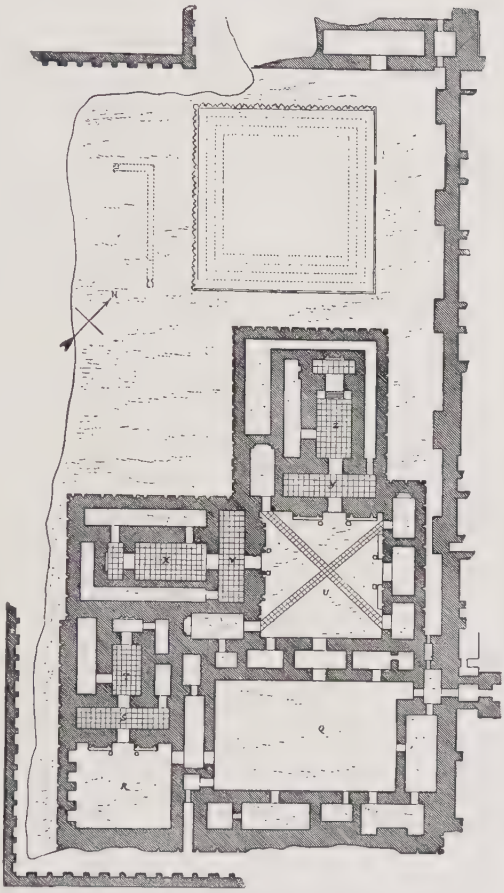
Fig. 48 shows such a vault in the process of construction. A solid and a movable surface, upright or sloping, must be provided in the first place, and against that the rings of bricks are laid, one upon another. Each ring lies at a slope of 45°, or thereabout, in order that the viscous quality of the undried brick or the friction of the rough surface of dried brick may help the adhesion of one ring to another. The knack of building in this way would come quickly, and it is evident that where



48—Vault building without centring: the canal or drain at Khorsabad. (From P. and Ch., Vol. II.)

the joints of the brick-work as seen on the soffit were indifferent—as when mosaic, or painting, or plastering of some kind was to cover this soffit, such building might go on with great speed and without injury to its solidity. It is not supposed that all wagon vaults were built in this way. Of the fallen fragments which encumber the floors,

there are some in which the structure seems to have been of a type more familiar to us. In these cases it seems as if a centring must have been used; but this centring would be needed for the crown of the arch only: the abutments and the haunches keeping their place quite well if an adhesive earth were used as mortar between sun-dried bricks. The centring would be nothing more than a kind of round-topped table, 10 or 12 feet wide and 2 or 3 feet thick, or high, in the middle, where the arch is highest; it could be made of light hoops of palm-wood, or large reeds, sprung to shape before drying; and, to keep this in place until the vault should be complete and partly dry, a temporary pile of common soft bricks would be carried up from the floor to the requisite height.



49—Plan of part of the Palace-Temple (Fig. 45). (From P. and Ch., Vol. II.)

Fig. 49 is a plan of an Assyrian palace. It is intended for that part of the great structure, Fig. 45, which comes at the extreme left, including the Zigurat and the six small courts immediately next to it, with the buildings around them. If the two drawings do not exactly agree, the student will see that the survey made by Victor Place and that made long afterward by F. Thomas resulted somewhat differently, as each explorer had to draw his own conclusions from the half-understood masses of crumbling clay in which his workmen were digging. It is assumed that this is the residential quarter of the palace. The entrance from the great outer court (the most prominent feature in the perspective view, Fig. 45) is by the doorway on the right in Fig. 49, and

the courts *Q* and *R* in this figure are those that in Fig. 45 are at the extreme left hand. From the middle of the northwest side of *Q* (see the compass needle) is the entrance to another court, *U*, which is evidently the centre of the private apartment, or the women's quarter, if that term is preferred. It is noticeable how, in this disposition, one part is screened off from another; how narrow and even labyrinthian are the passages; and how easy it is to prevent not only entrance, but even accidental overlooking of each court or hall. The compartments *Q*, *R*, and *U* are assumed to have been wholly unroofed.

The great outer court of the palace indicated in the perspective view (Fig. 45) must have been as full of persons coming and going as are the courts of the royal residences at Berlin or Munich or Vienna, where regular thoroughfares exist, except at certain hours of the night, and where short cuts of all kinds are in use. But once the private gateway passed, and the court *Q* entered, a different, more tranquil and more generally private condition of things must be supposed to have existed. The compartments indicated by the letters *S*, *T*, *X*, *Y*, and *Z* are all chambers which have been vaulted. The crossing of the surface by lines forming little squares is intended to mark the paving of the floors by large tiles of baked clay, whereas the rooms about the courts not so marked are assumed to have been floored only with pounded earth. It is the curious lay-out—the alternation of relatively narrow galleries with walls of relatively great thickness—which suggested to some writers of 1850 and thereafter the idea of roofing them with raised structures of light woodwork. These would form the upper side walls and the roofs of these galleries, serving as clearstories and allowing light in abundance to enter from side windows, while the upper surface of the heavy walls would afford an almost continuous floor between these rising pavilions; just as the flat roof of a modern structure, steel and brick, allows you to walk about between the skylights and ventilators.

These galleries are from 20 to 35 feet wide, in the earlier palaces of Nineveh. They are slightly wider under the reigns of the later kings; but it is easy to see that the wagon-vault in unbaked brick would set a very positive limit upon the width of the hall which it must cover. There is one case at least of a hall about 60 feet wide, with a longitudinal separation of which only the foundation remains; whether this was a continuous wall or a row of pillars is uncertain. Since the reaching of a general agreement among archæologists as to the vaulting of these galleries, there has been only one serious question with regard to them, and

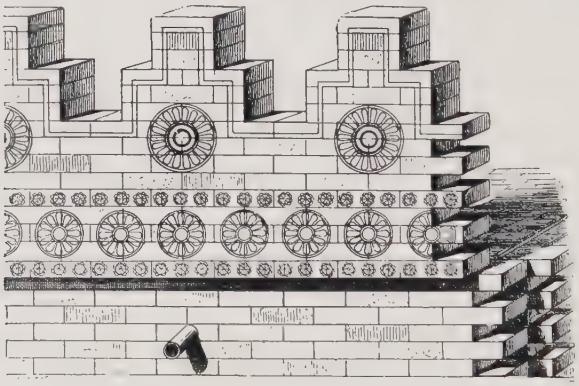
that is the provision for admitting daylight. The vaults have nearly all fallen in, and their remains, lying on the floors, are little more than a shapeless mass of clay—unburned brick resolved back into its original formlessness. Some of the suggestions and inferences are as follows, viz., that higher vaults rose at brief intervals, shaped like semi-domes with the rounded roof turned toward the quarter of unwelcome winds, and the wholly open side turned toward the quarter whence would come pleasant air and such daylight as was wanted, more or less full of the sub-tropical sunshine. Fig. 45 above shows, in the small semi-cylindrical and semi-spherical projections above the flat roof, the external result of such roofing and of the supposed openings for air and light. The flat roofs of the palace are simply the filling above the rounded wagon-vaults. The reader is not to forget that in a warm climate and a flat country, where the shade of trees is rare, the sun's rays have always seemed to the builders what they have to shut out; and shade, coolness, and fresh air are the things most desired by man. The modern house of the western world, with its numerous windows, thin walls, and small rooms, would be a very disagreeable residence. That remains true in the twentieth century: and no one living in Southern Syria, or in "Irak-Arabi," the lands lying west and east of the Arabian desert, would accept a house of approved European character.

The exterior of such a building as seen from the plain was a series of unbroken walls. Considering Fig. 45, it will be seen how the great doorways open upon the square courts, and how small rooms and large rooms alike are brought to a uniform height for the sake of that continuous terrace of the roof. Something like it, on a small scale, is to be seen in existing villages of Syria, where a house, seen from certain points of view, is a mere box, with sides and top smoothed off, and no visible openings. The smooth walls of uniform height are broken by towers, only in cases where defence was thought of, as on the outer side of the wall of a city, or of the bounding wall of a palace where this was intended to be itself a notably strong post as in Fig. 45. Everywhere a parapet of some kind would be erected to prevent falling from the roof, and this, in the case of a fortified building, would take the form identified from immemorial time with the defence of a place, namely, the form of battlements.[1]

[1] Battlements (plural) are the simplest protection for the defenders on the wall from the enemy's missiles. A higher piece of wall protects the archer while he prepares his shot; a lower piece of wall enables him to discharge it while still covering him to the waist. He steps out and back, alternately.

The battlement of Assyria, apparently of the older Babylonian structure, was either of the form of a leaf for every separate merlon, or, more frequently, as shown in Fig. 45, and on a larger scale in the detail, Fig. 50. The ornamentation in this figure, the larger and smaller circles filled with radiating forms as of the petals of a flower, are assumed to be of enamelled bricks, and fragments of such enamelled bricks were found in abundance in the mounds which covered the palaces of Nineveh.

It has been said above that columnar architecture could hardly exist in a country where the chief material was clay; and yet there have

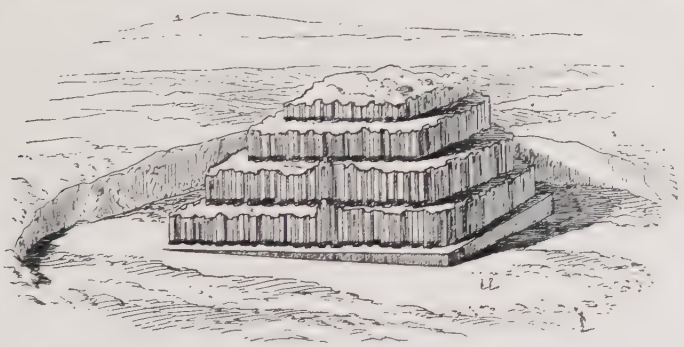


50—Battlement of Palace at Khorsabad. (From P. and Ch., Vol. II, where credit is given to Place, Ninive.)

been found a very few instances of round columns built up of brick carefully shaped to the curve. In this way a column may consist of forty or fifty drums or courses, but each drum will be made up of bricks of different shapes, the better to break the joints. In short, it is a small round tower that is built, and not a shaft in the ordinary sense. Thus at Tell-Lô there were found, during the excavations by De Sarzec, four such shafts in a group making one large pillar. These shafts are in part hollow, in part filled up solid, and they had been decorated with a coating of the same clay which was used in their structure. Others were found by Layard and by Place in the mounds of Nineveh, but they are small and slight colonettes. Nothing is known of their employment in the building, or of the superstructure which rested upon them, nor in the Tell-Lô pillar is anything known of the capitals or other finish at the top of the shafts.

The massive character of the buildings of Mesopotamia was made necessary by the softness of the material employed, as stated above; but the assertions concerning these structures made by Herodotus and

other ancient writers are not to be accepted as they stand. Thus Herodotus (I, 178, 179) speaks of the walls of Babylon as having a height which, according to the smallest interpretation, would be 300 feet; but unfired brick would sink by its own weight long before it reached that height, and there is no evidence to show that anything but unfired brick was used in these walls. On the other hand, the statement, often quoted, that a certain number of chariots could be driven abreast around the city on the top of these walls, has a certain truth. A very thick wall might be built, perhaps 70 feet high, and still keep its place for many centuries, if the exterior were faced with hard-baked brick laid up in lime mortar, or even in bitumen properly managed, and if the top itself were paved in such a way as to shed rain-water. The evidences are that these walls may well have been 30 feet thick in solid measurement, while they may have been very much thicker than that in the aggregate, if, as we may well suppose, there were vaulted chambers below to serve as magazines. It is easy, then, to imagine a street 30 or 50 feet wide and 70 feet above the level of the site, and this carried all around the city. It must always be kept in mind that what we are considering is the city of Babylon as it was after its recovery from the destruction wrought by the Assyrians, about 695 B.C., or after the

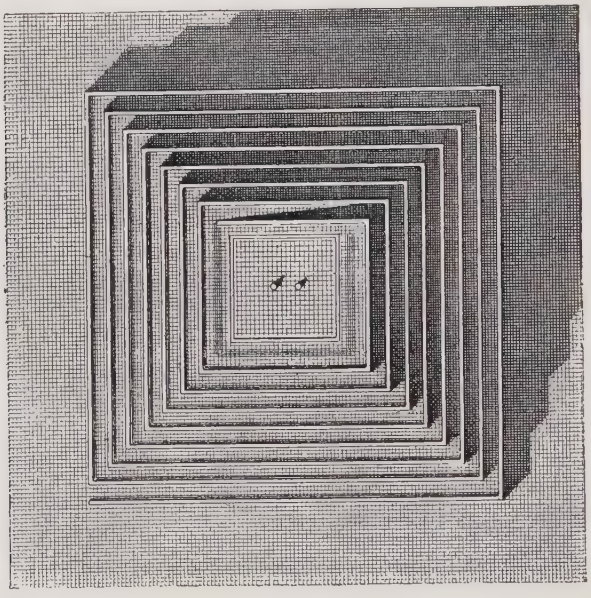


51—Zigurat called "The Observatory," at Khorsabad. (From P. and Ch., Vol. II.)

destruction of Nineveh, about 607 B.C., which would naturally tend to the unique glorification of the older city. It had been captured and spoiled by Cyrus at a later time, but it is not probable that the city itself was seriously injured.

The question of building for worship and ceremonial still remains to be considered. Two things seem to have interested the Chaldean builder: a lofty tower, from the flat roof of which he could study

the starlit sky and also look abroad over his flat and low-lying domain; and access to this height by means of easy external approaches, ramps replacing stairways, and the whole means of communication from base to summit open to the sky. We are to imagine, then, a structure of generally pyramidal form, 250 or 300 feet high. Fig. 51 shows a rough sketch of a building at Khorsabad and Fig. 52 gives its supposed plan.



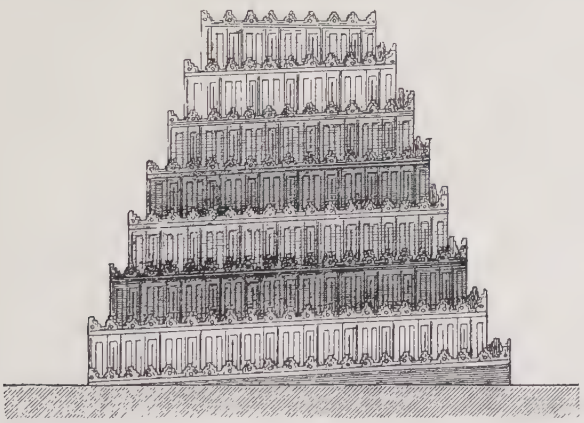
52—Plan of "The Observatory" (see Fig. 51). (From P. and Ch., Vol. II.)

It was very carefully disengaged by the explorers, under the direction of Place, from the ruined masses about, because it was felt that here would be found the explanation of that passage in Genesis xi. 4–9, about the tower at Babel, and, with it, of the religious and ceremonial architecture of Mesopotamia. The result of careful study is as seen in the restoration (Fig. 53). This is the building known as "The Observatory"; but as we look at these Zigurats with the enlarged knowledge of 1906, we understand that any such temple was really an observatory. It is hard to separate astronomical study from religion, in thinking of the priestly teachings of Mesopotamia.

The decoration by using alternations of colour, which may have had religious or symbolical meaning, was carried so far in some cases that the whole of a stage or horizontal stripe of the building would be of a different general hue from the one next below and the one next above.

It is this alternation which gave rise to the long misunderstood and disbelieved stories of Herodotus about the coloured contrasts of the fortified walls, stories which have caused so much romantic writing among modern men—"the sevenfold burning of the battlements of Ecbatana" and the like. What Herodotus says (I, 98) is that the battlements of the seven walls, one within another, which, however, were raised higher and still higher, so as to show from without the city, were first white, then black, scarlet, blue, orange: all these being painted; while the inner walls were topped with silver and with gilding. All this is entirely within reason.

Ribbed and fluted surfaces are found, evidently intended to increase the effect of these broad masses of colour; and these seem to be suggested by the building of partition walls by means of slender palm-trees or perhaps large reeds set close together (see Book I, Fig. 8, Tomb of Ti). These reeds or else slender palms might have furnished a species of columnar design, as in Egypt; but the idea seems not to have been welcome in Asia. There is, however, a certain limited use of free columns revealed to us by the bas-reliefs of the Assyrian palaces. Light pavilions upon the roofs of some massive buildings are shown in a



53—Proposed restoration of so-called Observatory, Fig. 51. (From P. and Ch., Vol. II.)

fashion which reminds the student of the temple standing upon the roof of a larger temple at Denderah (see Fig. 42), except that the pavilion is shown as small and slight in comparison. The Egyptian buildings are massively built of stone, and the flat roof with its supports below is quite sufficient to bear ten times the weight which the pavilion imposes upon it. But the Assyrian or Chaldean mass of half-hardened brick

would not receive without partial injury a considerable concentrated weight. Accordingly the kiosk in question is shown in every instance as a skeleton structure with four or six uprights carrying at each end a stout cross girder or lintel, and this again carrying a large, flat slab. We may imagine the whole to be of selected stone—stone of choice quality brought from far. The slab, even of soft alabaster, would last many years in the climate of Mesopotamia, and the remainder of the structure might be built of even a costly stone from the mountain region of Asia Minor. The labour of men and of beasts of burden might be used freely by the Chaldean or Assyrian monarchs; and so much stone and timber as would suffice for an elaborate adornment even of a vast city might be brought overland from Arabia, or from Asia Minor and down the Euphrates. Statues were found at Tell-Lô, by the first explorer, De Sarzec, wrought in that fine hard diorite which we found in use in a similar way in Egypt.

For interior decoration many ingenious schemes have been found in use. In the very ancient buildings recovered from the mounds at Warka there have been found wall surfaces covered with a thick plastering of clay and chopped straw, in which surfaces were fixed a great number of pins or slender cones of baked clay with the butts showing. These butts, having a different colour from the surface around them, are arranged in various patterns, exactly as in modern times a frame to a wall-painting has been managed, sometimes, by brass-headed nails grouped in scrolls and zigzags. The Chaldean units of design have the additional advantage of being varied in colour; for the baked clay allows of enamelling in any hue. Some of these pins are of a different character; they have broad heads and slender stems, and are in form exactly like nails or spikes. Enamelled brick-work and enamelled tiles are used to adorn the walls below and above the bands of relief sculpture described in this Book, and again the face or archivolt of an arch is found adorned in the same way. In another place the form of the battlement described above is repeated on interior wall faces, merely for the sake of the fret-like combination of straight lines, and this as a boundary for colour patterns.

The most important adornment of the Assyrians was, however, the sculpture in flat panels or slabs of alabaster. This seems to have been used with great freedom. The more important halls of an Assyrian palace were lined in this way, and the sculptures which we have represent at least five centuries of evolution and slow modification.

The earlier slabs show a more severe and even archaic style of design, the details being given with great reserve, but the composition fine and architectural. In the later years, as under Sargon (722–705 B.C.), de-

54—Assyrian bas-relief, Museum of the Louvre. (From photo.)

tails of costume, pose, and ornaments of dress, weapons — and even the muscular structure of the beasts of chase and of the men who hunt them —have been most carefully worked up into exaggerated representation

of life; and the work, though still most interesting and attractive, is felt to be of an inferior artistic spirit. One of these reliefs of earlier times is the slab (Fig. 54), in which a winged and eagle-headed genius is shown —one of two such beings who stand facing and touching "the sacred

55—Assyrian bas-relief, Louvre Museum. (From photo.)

tree." This latter emblem is one continually occurring in early Oriental art, and inquiry into its full significance need not detain us. Tree-worship and the association of trees with worship continually appears in various mythologies.

Fig. 55 is a large slab of the later period. There are parts of four horizontal bands of sculpture, of which the lowermost band is broken away, the second shows the work of the commissary department, while above, the principal and the second stories of the whole composition show warriors, in their chariots and mounted, plying the foe with archery in a way that reminds us of the defeat of Crassus by the Parthians, 700 years later. The purpose of the very close copy-

ing of the one band of figures from the other, or both from the same original, is uncertain, but it is effective when considered as wall decoration only, as there is just enough diversity between the action and the details to give a living interest to the whole.

Architectural sculpture in the more considered sense of the word, the treatment in a sculpturesque way of the architectural members themselves, is not very common. The fact alone of the almost exclusive use of clay as a building material would prevent much use of architectural sculpture on a grand scale; and the free use of the finer and softer alabaster compelled the carvers to think of the walls within. It would have been feasible to use terra-cotta sculpture, as it was used in pre-Roman Italy; but the idea of firing clay in large masses did not occur to an Assyrian as feasible. The most striking instances of stately architectural sculpture are the gigantic human-headed bulls which, in some of the palaces, stand at the flanks of the deep doorways in thick walls; that is to say, the bull standing at the corner of the solid mass of wall, where the opening is pierced, is carried along on both faces of the wall by relief sculpture, as seen in Fig. 56. The extreme importance of these winged bulls and the great interest excited by their discovery make it desirable to show one of them in detail, as in Fig. 57. In both of these pictures may be seen that very curious disposition by which the bull has two legs when seen from the front, as on the left of Fig. 56, and four legs when seen on the flank; with the result that when looked at cornerwise five legs are seen to exist, each as carefully and solidly worked as the others. This is a perfectly natural result of the strictly relief character of the Assyrian sculptures. No statues have been found in the mounds; very few objects of sculpture "in the round," even of the smallest size; it is clear that, to an Assyrian

56—Angle between jamb and wall-face in Assyrian palace; winged bull and part of frieze of figures. (From photo.)

artist, relief was the only kind of sculpture conceivable. He treats his divine creature, then, his crowned and winged human-headed bull, as relief sculpture on two different planes, at right angles, one with

57—Winged Assyrian bull, Louvre Museum. (From photo.)

the other; and cannot conceive of giving him, in either sense, fewer than the proper complement of legs.

In what is given above about the architectural art of Chaldea and Assyria, no attempt has been made to distinguish carefully as to the earlier and later Babylon. Even the exact relation of Assyria, as revealed to us in the northern mounds, to the remains of the more southern cities, is not insisted on, and this because the system of building and

of design is nearly the same so far as concerns the great study. We need the better known facts of the Assyrian building to explain to us the as yet little known work of earlier times. Those Mesopotamian styles interpret one another; but in the buildings of Persia there is a marked distinction.

Assyrian lion of bronze, serving as a weight; about 16 inches long; found in the mound of Khorsabad (Palace of Sargon). Now in the Louvre. (From photo.)

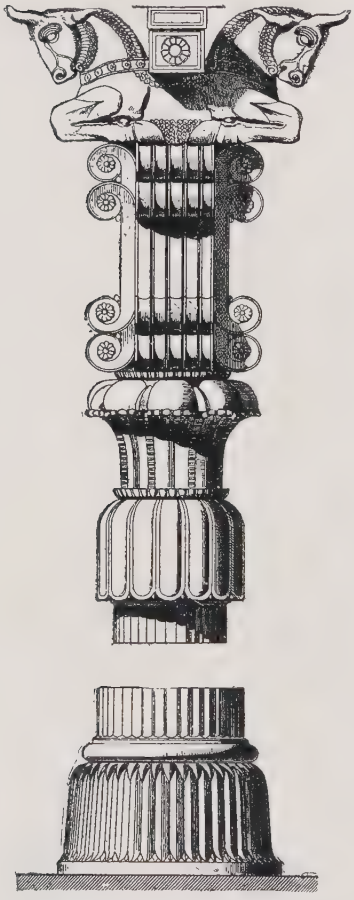
CHAPTER II

PERSIA

THE whole territory which now constitutes the Kingdom of Persia, and which, as Persia, Susiana, and Media, was in ancient times the heart of the Persian Empire, is a country of stony hills, affording everywhere solid building material. We have, then, in the Persian work of the fifth and fourth centuries B.C. the evident attempt to follow Babylonian and Assyrian plans and disposition, while using solid stone masonry for the substructures and the heavier walls. We have also the rapid introduction, at the same time, of an architecture wholly columnar, but with its columns so slender and so widely spaced that it almost certainly originated in the use of wooden columns, often set upon stone bases or in metal sockets, and carrying a superstructure of wood. Indeed, the wooden roof and ornamental cresting probably remained to the end; and helped in the development of a somewhat fantastic method of design. Still the trabeated structure is as absolute in this branch of Persian work as in Egypt or Greece, and this can only be accounted for by supposing a strong desire on the part of the ruling princes to imitate the columnar architecture of other lands, in which the use of stone, for uprights and horizontals alike, was universal from an early period. These structures, in which stone columns and a lighter wooden superstructure are combined, may be considered as the style of the Persian court; and contemporaneous with it is the special architecture of Persia, based upon the use of clay as completely as is the building of Mesopotamia, but with a freer use of hard-fired brick; to be accounted for by a better supply of fuel. That architecture of stone and wood seems to have disappeared, then, with the fall of the dynasty of the Achæmenides, and the triumph of Macedonian ideas, in the fourth century B.C., but the architecture of clay endured; it has continued till the present time,

58—Plan of the great platform at Persepolis, reduced from the survey by photographic theodolite. (From Stolze and Andreas.) *k*, ruins of the Propylaia; *i*, throne room of Xerxes; *f*, Hall of a Hundred Columns; *b*, palace of Xerxes; *d*, palace of Darius; *h*, tomb cut in the rock (shown in Fig. 70).

through all the different periods of native and foreign government and influences, and it attained a result of free brick-built architecture, rich in colour decoration, under the Moslem rulers of the years following their conquest in the ninth century. There are, therefore, to study in Persia, first, the strange columnar architecture raised upon huge platforms, as at Persepolis, and second, the early evidences, as at Firouzabad, of that vaulted architecture of brick which has been so enduring; but this last belongs rather to Book VI and our second volume.



59—Study of order of Propylaia at Persepolis. (From P. and Ch., Vol. V.)

Fig. 58 shows a plan of the great platforms at Persepolis, south of Ispahan, and near the shore of the Persian Gulf. The double stairway of approach is seen near the extreme northwest corner. This is quite without ornament, the ramps or parapets finished in plain steps of larger size. It reaches the level of the platform by about eighty steps. The indications on the platform at the top of this double staircase are those of the propylaia, a building thought to be of the time of Xerxes, who was reigning in the year 480 B.C., when he started for the invasion of Greece. It consisted of corner pieces of considerable horizontal dimensions with huge sculptured bulls, and four columns of the type shown in Fig. 59, and its general character is sufficiently marked by the foundations, so that it may be described as an open pavilion built of unfired brick, though perhaps with a hard brick exterior facing, and ornamented in many parts with colour patterns. The columns, although of stone, retain from their wooden origin the high socket-like base: and probably many parts of the decorative composition above the shaft. The curious returning mass resembling a group of drooping leaves, which forms the lowest part of what may be thought its capital, may sug-

gest the drooping fronds of a palm-tree, and the upward springing concave lines of the member next above express equally well the living fronds which form the crown of such a palm. Those who have seen palms growing freely in a climate where they flourish will remember how impressive is the contrast between the rounded figure of the green crown and the swinging brown fronds below it, dead but still holding to their place. Each year sees a new frond spring up in the middle and an old one droop and die. From this the inspiration may have come for this double capital, above which rises an additional member, in which a system of volutes is introduced, expressing far more strongly than does the volute of the Ionic capital the idea of a heavy timber chopped with the adze until large, curling splinters are partly detached on each side. It need not be asserted that this ornament is an imitation of such simple carpenter-work as that; the mere lingering in the memory of the forms produced in that way would be sufficient suggestion for an imitative designer. The placing of a rosette in the middle of each volute is an obvious thought of the designer. Upon this rises the capital proper, which has also the most extraordinary qualities of Persian decorative architecture and which has, nevertheless, the same character as of an obvious device. Existing and recently existing houses in the mountainous region of Asia Minor—a country in many respects similar to that surrounding Persepolis—point to a prevalent custom of supporting roofs in this way, using the forked trunks to hold in place the girders which reach from post to post. We can imagine, easily, the Persian sculptor cutting these two branches into—not *bull-heads*, as is so often stated, but the entire fore part of a bull, neck, breast, and bent fore legs. Fig. 60 is an attempted reconstruction of this decorative approach. The addition to the exterior of the building of enamelled brick in patterns, in a fantastic parapet and in a frieze of lions in brilliant colour, is a confessedly unwarranted restoration; but the decoration of the actual entrance by two huge winged bulls, with human heads crowned with heavy tiaras, is wholly justified, for those two bulls remain in almost complete preservation except for the finish of their surface. They are very like those of Assyrian art, as shown in Figs. 56 and 57. They, with the door-jambs of which they form part, are of stone in large blocks.

Turning toward the south we reach the second series of stairs, which lead to the upper platform; and it may be noted here that the

arrangement of these stairs in either case suggests a provision for the passing of processions—long files of ceremonial officials or perhaps of captives taken in the wars, who would ascend one flight, pass in front near the throne of the sovereign, and descend the opposite flight of

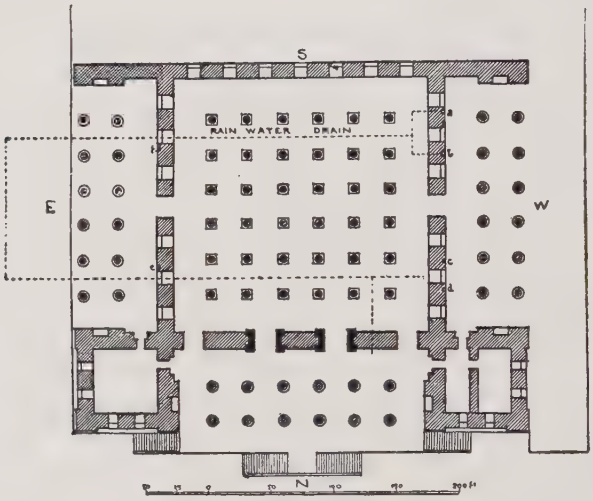
60—Suggested restoration of outer Propylaia on platform at Persepolis: design of Charles Chipiez. (From P. and Ch., Vol. V.)

stairs. This upper stairway was adorned with very rich sculpture; a marching file of soldiers of the guard, on either side: and below, the favorite subject of the Semite peoples of antiquity, lions tearing bulls or other large creatures (see Fig. 62, where a part of the procession is given). This first higher platform is devoted to the building called

the throne room, or the hypostyle hall, of Xerxes. It is one of the most remarkable ruins preserved from ancient times. Nothing but the shafts, and parts of some capitals of the columns remain in place, as seen in Fig. 62, and here we have to imagine bounding walls of unfired brick, strengthened and partly faced by fired and enamelled brick, as in the case of the propylaia, or else a wholly open pavilion, a roof upon columns, and nothing more. If there were walls, they had not so much hard brick in their construction as to have saved them from complete disappearance. They seem to have melted away from the surface of the great platform. There remain, however, stone blocks which some explorers have called altars, while others see in them evidences of such stone doorways as are described below. This hypostyle hall consists, in the first place, of a block of thirty-six columns forming a great square. It is generally assumed that all the columns of the central hall reached the same height and were treated in the same way. They were all of the character of that shown in Fig. 59, which is a restoration of the propylaia column. On each of the three sides, east, west, and north, a portico of twelve columns stood, most of the shafts of which are still in place. These columns seem to be less elaborate in that the crowning member of two bulls, forming a double capital and carrying the beams of the roof between the rising necks of the creatures, is supported immediately by the stone shaft, without that strange palm-like sub-capital and its accessories. The roofs are entirely lost, and all the restorations are merely interesting studies of what modern designers took to be the Persian work of the time. Such restorations are given in different forms by Perrot and Chipiez, and a very important reconstruction, a model on a large scale, is set up in one of the new halls of the Louvre.

None of these restorations involves the idea of enclosing walls. According to them the building was a kiosk, that is to say, an open shelter—columns carrying a solid roof but without enclosing walls. The space between the columns would be filled with screens, perhaps only of embroidered stuff, or of woven material such as the originals of more recent designs for Persian rugs would naturally be, and hung on rods. And these screens may either be between the columns below, to prevent observation or intrusion, or above, and hung below the epistyle, to keep out the sun more effectively during certain hours of the day. The central group of thirty-six columns measures at least 160 feet square, and the roof may well have overhung that dimension; while

the height from the platform to the ceiling would be about 60 feet. This would afford much shelter from the sun's rays, and the side porticos, more than 60 feet away, having twelve columns each, are thus about 40 feet wide by 160 feet long, with a height 10 or 12 feet less. It is indeed a summer house on a gigantic scale, and the feeling of the



61—Conjectural restoration of the Hypostyle Hall of Xerxes at Persepolis based upon the discovery by English explorers of vestiges of walls.

modern student toward it has been instanced in the titles given it, for it is not spoken of as the palace of Xerxes, except very carelessly. The residence buildings of that palace, whatever their importance and size, must have stood on that part of the platform which is further to the south and east. This, however, is not the final answer to what is a very interesting question. During the half century since Flandin's visit, other students have studied the platform and have reached different conclusions. Mr. C. J. Weld-Blundell had some further excavations made and found an unmistakable foundation for a wall more than 11 feet thick and enclosing the groups of columns. The resulting plan is given by Mr. R. Phené Spiers in a paper reprinted in the memorial volume "Architecture East and West" (London, 1905); and this plan is given in Fig. 61. It must be accepted as largely conjectural; but it commends itself at once to the practiced architectural student. It shows a hall 200 feet square, within the walls, with its roof carried by thirty-six columns, and three porticos of twelve columns each,—a disposition not unfamiliar to the western world; and in that very

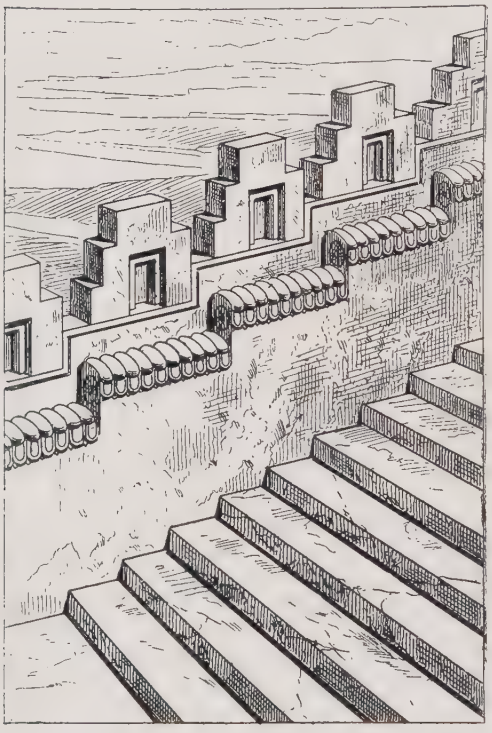
familiarity of this plan lies the doubt as to its authenticity. It is evidently akin, however, to the important building named next below.

Returning to the general plan (Fig. 58), the building to the east of the pillared hall of Xerxes is known as the Hall of One Hundred Columns, and here the structure was much more solid, with walls which have left important traces, and columns much nearer together—a room more like those of a western palace. The outer wall of this building is fixed by its foundations, and had a thickness of something over 10 feet. The columns, judging from their fragments, were nearly of the same character as the bull columns of the buildings named above, and the chief entrances were marked by winged bulls sculptured on stone

62—Sculpture on retaining wall of great platform, Persepolis. (From Stolze and Andreas.)

jambs as in the Propylaia (see Fig. 60). The building has been ruined as if by deliberate purpose, for not one column remains erect, whether of the central hall or of the portico in antis with sixteen columns in two rows. The interior forms a nearly exact square of about 225 feet, the difference established by Coste amounting to 7 inches only. The

effect, if it could be compared with that of the still existing hypostyle hall of Karnak (see Book I, Fig. 18), would be radically different in respect to the amount of space left free and the amount occupied by solid support, for in the Persian hall nearly all the pillars may be seen as once, when viewed from a well-chosen position. The building evidently had lightness and cheerful magnificence as its intended motive, as against the ponderous solemnity of the Egyptian halls.



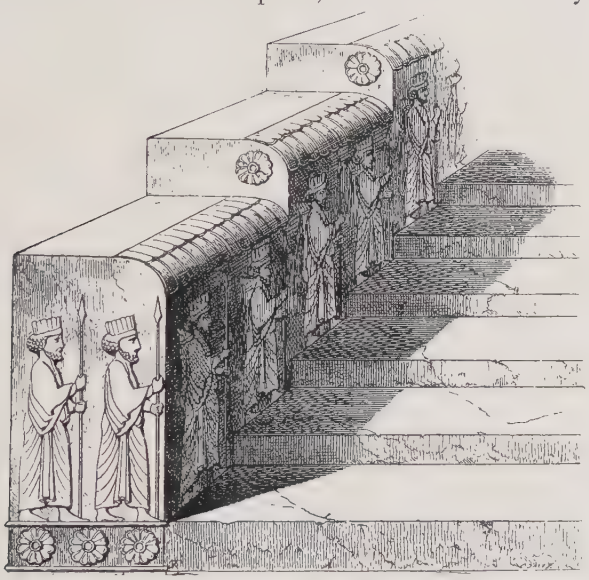
63—Parapet of stairway of approach, great platform of Persepolis. (From P. and Ch., Vol. V, where credit is given to Dieulafoy.)

The building marked *b* in the plan, Fig. 58, is the so-called Palace of Xerxes, that is to say, the buildings assumed to be the royal residence, throne room, and treasury. It crowns a small separate platform, about 20 feet higher than the site of the Hypostyle Hall. In the same plan *d* is the Palace of Darius so called; and the remains of this being more abundant, Mr. Chipiez has made a restoration[2] embodied in a coloured plate. The doorpieces and window-casings of solid cut stone and of much elegance of design remain in place, while the walls have disappeared. Restorations, when made by well-informed archæologists, who have also the sense of what is practicable in architecture, are instructive and in every way valuable provided the student is able, either by his own knowledge or by the suggestions furnished by the author of the restoration, to separate the nearly certain from the probable and both from the wholly conjectural. The study of remote antiquity and of lost and forgotten styles is greatly helped by these suggestions; but the student must discover and keep in mind the amount of complete uncertainty which exists in the carrying out of

[2] Histoire de l'Art dans l'Antiquité, V, pl. ix.

these elaborate drawings. The draughtsman cannot leave a blank—but the student must learn to see a blank in the picture, there where the reasonable inference gives out and pure guessing has taken its place.

So little is even suggested by the existing ruins, as to the superstructure, that it need hardly be considered here. The probability that it closely resembled those roof pavilions mentioned in the first chapter of this Book is emphasised by the continual reference to the earlier forms in every minor detail of the structure. Thus Fig. 63 shows a part of the parapet of the staircase at Persepolis, and this is evidently a very close



64—Stone parapet of stairway sculptured with marching soldiers—Persepolis. (From P. & Ch., Vol. V.)

study of the battlemented parapet of the Assyrian platforms. Fig. 64, repeating the motive shown in Fig. 62, may be thought, indeed, to show a novel expression of the decorative sense. The human figure carved in hard stone, for outdoor exposure, is there combined with architectural sculpture of a severe foliated type. This motive of what seems a royal guard armed with spears and with quivered backs, prevails so greatly that the most magnificent piece of decoration yet discovered in Western Asia has this and no other scheme. This is a wonderful frieze of the royal archers which was found at Susa in a state of excellent preservation caused by its having fallen—the whole wall together—face downward upon moderately soft earth. All of this wall is in excellent hard brick with the relief moulded upon the bricks themselves, each

brick having its part of the whole design, and thus helping to complete the relief sculpture, without uniform plastering or coating of any sort. These earthenware reliefs are coated, and the design completed, by the most brilliant coloured enamels. Fig. 65 shows a part of this frieze as it now stands in the Louvre. It is, of course, to be remarked that the bricks have been taken apart, transported to Paris and set up again, but every care was taken in the doing of this, and moreover the com-

65—Frieze of Royal Archers, at Susa. Louvre Museum. (From photo.)

pleteness and high finish of the design itself would prevent any misplacing of the parts. The brilliancy of the colour and the lustre of the glaze have hardly suffered during the twenty-two centuries which have passed since these were fired. The very interesting *palmettes*—the anthemion pattern—above and below the frieze of archers, with a secondary band of triangles of contrasted colour, are all worthy of study, the more so that they point to the close relation between this Persian art and the art of Babylonia and Assyria.[3]

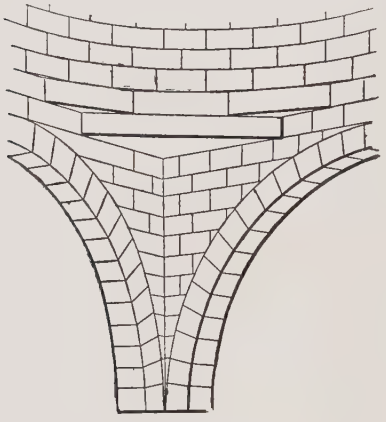
[3] A frieze wrought in the same manner and presumably with close reference to the Susa frieze, was built into the wall of *le grand palais* at the Paris Exhibition of 1900. A part of it is shown in photography in the large work, La Manufacture Nationale de Sèvres a l'Ex-

The brick-built edifices of Persia are often of disputed date. The Palace at Firouzabad and that at Sarvistan have caused disagreement so great that sagacious explorers have suggested a double date—perhaps a structure of the time of the Achæmenides, and a surface adornment of the time of the Sassanidæ; a building imagined as left half finished for five centuries or more. These are the difficulties which come of an almost complete absence of verbal documents, written, inscribed, carved in relief, or painted. The inscriptions or, rather, painted texts, are seldom concerned with anything which would fix the date of a building: and the forms of the letters have not been studied, as have those of Greek and Italian characters, in such a way as to fix dates easily. It is, however, quite certain that the method of construction, taken by itself, was nearly the same at these separate and remote periods. Everywhere unfired bricks are used, wherever there is an opportunity to lay out walls of great thickness. It is only when, by the nature of the case, masses could not be large while yet the solidity and endurance must be great, that fired bricks are used at all.

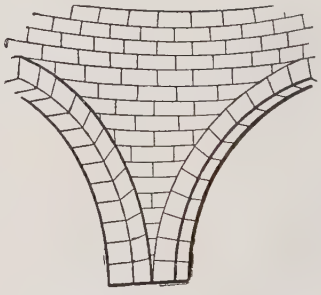
One novelty appears, however, in the building with fired brick; namely, mortar made with lime and sand, nearly in the modern way. By means of this apparently original device the superstructure of the Persian palaces is as durable as could be asked. As the walls and domes are always built of fine hard-baked brick, their light shells seem to be built for an endurance as great as that of the stone trabeated structures of Egypt. These vaults are either wagon vaults (tunnel vaults, as in the Assyrian palaces) or they are cupolas. Groined vaults are avoided, even where two galleries have to cross, by the device of lowering the crown of one well below the springing line of the vault of the other; a device that we shall find again in the work of the Roman imperial engineers. On the other hand, cupolas are built with great boldness; and the circular cupolas rising from a square room below are the earliest of this structure that are known to us. One method of doing this is to reduce the square to an octagon and to build the vault upon that. As an intermediary step, the octagon may be reduced to a sixteen-sided plan. Fig. 66 shows one corner of a square room which is made into an octagon (not necessarily regular, with all its sides equal) by means of a lintel or beam set diagonally from wall to wall,

position Universelle de 1900, and reproduced in the present author's book, The Artist's Way of Working, New York, 1905. The effectiveness of the painted relief may be thought even to be increased by the joints between the bricks.

and this again is brought to a sixteen-sided figure by other lintels resting on the first and on the wall beyond. It is evident that the difference between such a sixteen-sided figure and a circle is very slight, and that a skilled mason using large bricks may so humour his circular curve of the first course as to overlap the sixteen-sided plan in one place, retreat

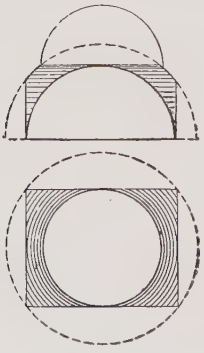


66—Simple form of pendentive. (From A. and B. Dicty.)



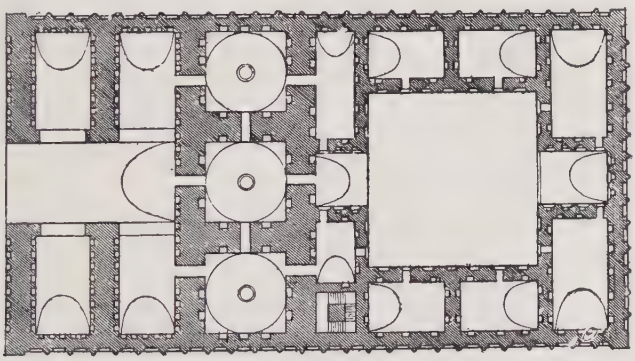
67—Pendentive of which the surface forms part of a sphere. (From A. and B. Dicty.)

from it in another, and without perceptible violence to the uniformity of the structure, carry his round dome easily. That lowermost lintel may be replaced by a flat arch or an arch of segmental curve with but slight rise in the centre. A still more simple form, when one has become somewhat familiar with the art of building in this way, is that shown in Fig. 67. In this case, having the two arches which span the openings in two adjacent sides of the square, you start at once, between them, with a part of a spherical vault. Now, evidently, three more similar vaults may be started at the same time and all four, starting from the same level, may be carried up until the sphere is complete. There will result a cupola into which the four arches of the four sides of the room penetrate to a very great height. It is not an effective cupola; it looks like a make-shift, it is much too slight for masonry, and has found its first fitting use in the metallic cupolas of nineteenth-century exhibition buildings. Eye and mind crave a much greater weight, or the appear-



68—Cupola with pendentives covering oblong space. (From A. and B. Dicty.)

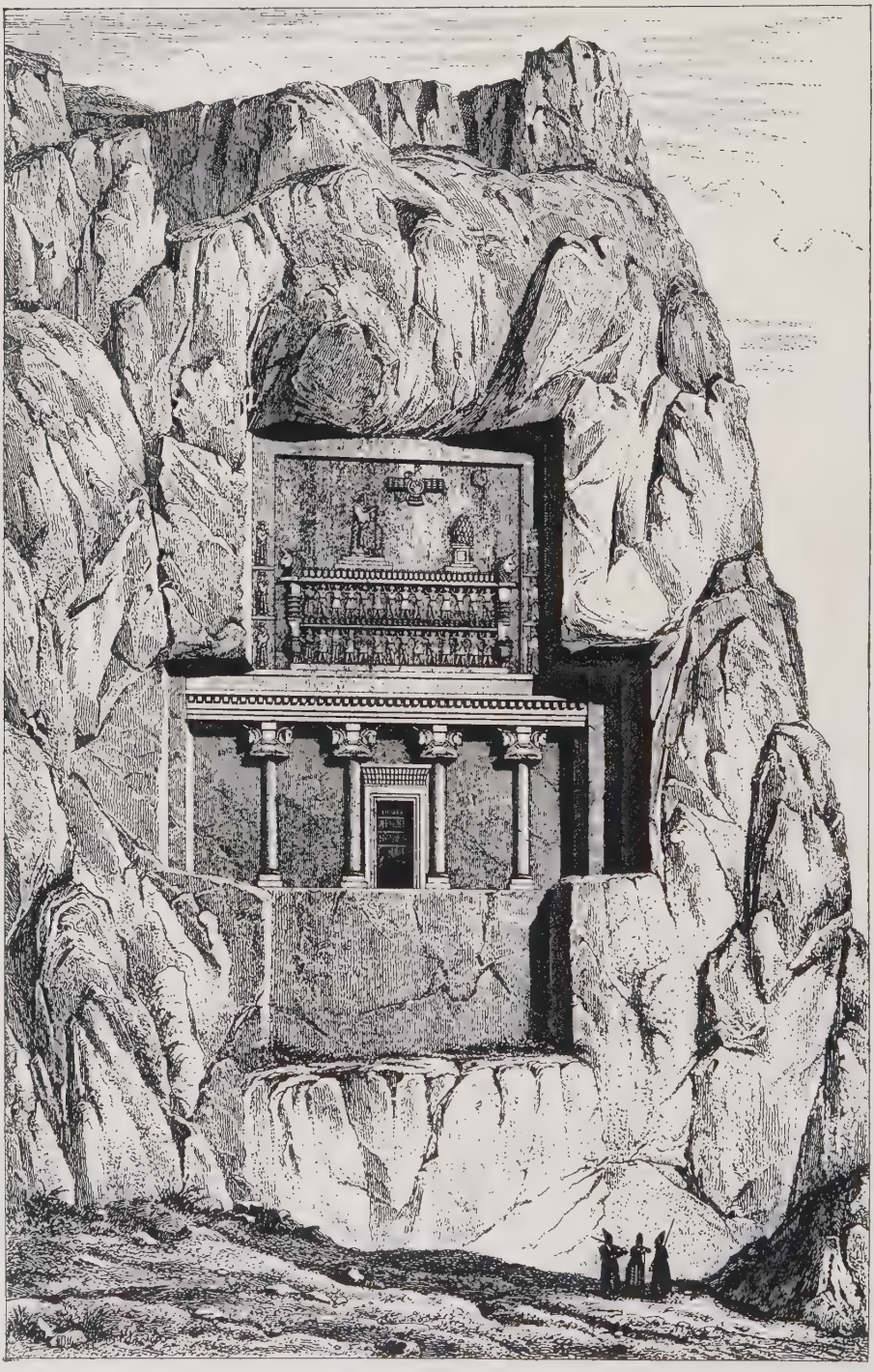
ance of much greater weight, bearing upon those arches of the four sides. Accordingly another plan may be followed, as shown in Fig. 68. The shaded part in the plan and in the upright view alike stands for that part of the greater sphere, the original sphere, which forms the four pendentives: but this sphere is carried no farther. The rising pendentives shaped out of the larger sphere stop at a given horizontal level a little above the crowns of the four arches, and there they form a complete horizontal circle of brick-work from which the smaller cupola may spring, having almost any curve which you choose to give it. The arrangement by which in the cut it is not a square, but a parallelogram which surrounds an inner circle, is not essential; that is merely intended



69—Plan of palace at Firouzabad. (From P. and Ch., Vol. V)

to indicate how a larger or a smaller square, or even an oblong as shown, may be treated in this fashion.

But again, people building in the free and simple fashion which we have already noticed in the Persian work, may, if they choose, modify the sudden transition from the polygon to the curve in the smaller cupola; and may thus develop out of pendentives and cupola together, a single rather conical dome-shaped roof with a pointed top, or with a plainly rounded top, but in either case passing almost insensibly into the square below. Such a system would not please the architects of the Western world nor their friends, but it does good work in the more simple-minded communities of the East. Fig. 69 shows the plan of the palace at Firouzabad. All the different schemes suggested above as methods of passing from the square to the circle are employed here. The builders have used vaults which are not truly spherical, but approximate rather to the ovoid form. Others of the same class exist which are finished with a sharp point, produced by a very slight reversed curve



70—Study of rock-tomb above great platform at Persepolis. (From P. and Ch., Vol. V; where credit is given to Texier's Arménie, Perse et Mésopotamie.)

near the crown of the arch. It is curious, also, to see how carelessly, according to our standard, the work is done in certain places. Wherever it has been thought that, the arch being small in span and heavily loaded, the work could be treated freely, the bricks have been put in at almost any angle and the strength of the mortar has been trusted to do the work. Some of the vaulting approaches the old-fashioned corbelled work with stones projecting one beyond the other, horizontally, as in the Mycenæan beehive tombs; but this corbelling is not accurately done, nor are the courses truly horizontal. For these vaulted structures, see the discussion of Sassanian Architecture in Vol. II of this work.

The tombal architecture of the Persians is varied and forms a subject remote from architecture in the usual sense. There are only the rock-cut façades which need occupy our attention. Fig. 70 is the façade of a tomb which shows in the rock wall above the platform, at *h*, Fig. 57. Here is seen cut in the rock an order of columns, with bulls carved in the capitals, which carry an entablature. Above this is the king's palace of prayer, a sculptured representation of what seems a colossal throne with elaborate corner pillars.[4] On the face of this throne is a double band of soldiers, apparently a part of the ornamentation of the throne. The suggested columns crowned with bull-heads forming the angle of the structure so represented, and the appearance upon it of the altar with a burning offering, the king doing homage to a divinity poised in the air above, and the disc of the sun, all point to a very elaborate religious theory underlying this decoration. Other such tombs exist at Persepolis and at Naksh-I-Rustem, often sixty feet or more in vertical height; and they are useful in giving an idea of an ancient Persian architectural composition.

[4] The throne even of a modern Shah of Persia is a large raised platform, on which several persons could sit, with cushions, in the Oriental fashion.

CHAPTER III

SYRIA AND PHŒNICIA

THE ancient peoples of Western Asia have left their architectural remains scattered over the whole country north of the Arabian Desert. For our present purpose is to be considered only so much of the territory as lies westward of the Persian frontier. The low country of Mesopotamia seems to have for our study only the remains of the early Babylonian (Chaldean) Empire, the Assyrian realm, and the later or revived Babylon. If there are exceptions to this, as in the traces of Mycenæan art described elsewhere, these point to an influence, exercised in ways which we do not understand, over the builders of a realm otherwise an independent nationality in constructional art.[5] The country nearer the seashore was the home of many contending races; peoples whom we know from their scattered inscriptions as Aramæans, Elamites, Kassites, and by other names. Some of these are the peoples whom the Hebrews partly expelled and partly subdued, throughout the comparatively small region from north latitude 31° to 33°, and from longitude[6] 35° to the sea; but they had their immediate congeners in the country near, which the Hebrews never occupied and hardly influenced. The seacoast north of 32° north latitude must have been wholly under the control of the Phœnicians from a time which can be put roughly at 1000 B.C., and it is on record that the Hebrew kings, David and Solomon, reigning from 1055–975 approximately, and extending the Hebrew power over the widest field which it ever controlled, were always friendly with the princes of the Phœnicians. Farther north the country about Lebanon and thence to the line where Asia Minor may be thought to begin, about 37° north latitude, the mountain tribes of Asia Minor itself continually held sway,

[5] Mycenæan Art; see Book III, Ch. I, of this work.

[6] East of the Greenwich Meridian, as elsewhere in this work.

expelling one another by warfare or by incursions, acknowledging sometimes a far-away allegiance to the kings of Syria or even the rulers of Persia. Independent kingdoms also grew up among these races, as we find in the much later Roman period in the case of Armenia and Pontus. As early, at least, as 600 B.C. Greek colonies along the shore of the Ægean Sea grew up into powerful cities. Before that time, however, the native races or the native princes (for it is hard to distinguish racial and purely political divisions) are to be classed separately as of Cappadocia in the mountainous heart of the country, of Mysia, Lydia, Caria, and Pamphylia, to the west, and Cilicia (Kilikia) and Lycia to the south—while the great central power of the Phrygians, certainly a warlike race coming in from Central Asia, or from the country immediately northward, the Caucasus and Southern Russia, held sway from about 1500 B.C. down to the time of historical record. Among these races, our names for which are geographical, there are found traces of a great empire of military and predatory renown, which has been recognized only since 1871, and has hardly been studied seriously, except by two or three devoted searchers of the almost untraceable past. This is the race which the French archæologists, following the form used in their translation of the Old Testament, call *les Hétéens*, and which the English writers call Hittites from the mention of them in Exodus, Numbers, and the more historical books, especially I Kings ix, 20, and II Chronicles viii, 7. This Hittite empire had not been dreamed of as a possibility; and even now opinions differ widely as to its probable extent and importance. There are certainly in the Old Testament more allusions to them as in some way subject to the Hebrew kings than as formidable enemies; but this is explained by the very strong probability that their power was already declining when the Hebrews entered Canaan about 1200 B.C.

Thus it appears from the Hebrew record (II Chronicles viii, 7–9) that King Solomon, wishing to build "for his pleasure," required forced labour of "all the people that were left of the Hittites . . . which were not of Israel," while the Hebrews themselves did no building or other artistic work. We are reminded of the heavy drafts he made on the resources of King Hiram (Huram) for, not gold and cedar trees only, but also for those of his servants who understood the manual and decorative arts. The Israelites of the time may have had the feeling recognized in other dominant races of Asia, that the plough and the sword were the only tools fit for the hand of the freeman. Or, again,

the Hebrews, as cousins of the Phœnicians, may have been without the artistic sense in an exceptional way. No architectural achievement appears to have resulted even from the life as slaves in Babylonia (about 586–538 B.C.), except the rebuilding of the temple after the return from the captivity. There are no vestiges nor any adequate description from which even a partial restoration can be made of the temple of Solomon, or of the temple of Zerubabel; all previous building on the site was swept away by the temple of Herod, about 20 B.C.

The architectural remains of the races named above lie scattered over northern Syria and Asia Minor, countries which have been little explored by persons of studious and inquiring disposition and still less by professed archæologists. Moreover the governmental "missions" and private enterprises have had for their purpose generally this or that definite epoch in history or some ethnological division of mankind. Thus, the Count Melchior de Vogüé undertook in 1853–54 the exploration of the desert country east of the Jordan (Dead Sea) and farther north, and took with him competent artistic draughtsmen and surveyors. They had means enough, and they did their work with great thoroughness. The work of De Vogüé was with the buildings of the late Roman period, both pagan and Christian; and the drawings of Mr. Duthoit opened to students of architecture a wholly new world of that art which is properly called Romanesque, that is to say, quasi-Roman, would-be Roman, Roman of the transition. Those discoverers then, ardent students of that fine art which we call architecture, passed heedless by the traces of those earlier civilizations which are now under consideration. Another expedition was undertaken long afterward; this one by an American university, intended to follow closely upon the track of De Vogüé and to re-examine the same buildings, to reproduce them by means of photography (which was hardly an effective means of record in his time), and to verify his measurements and his theories. This expedition also, though of a date so recent, ignored the traces of the non-historical buildings to which this chapter is largely devoted; and it was right in doing so.

In the mountainous countries of Asia Minor, the epoch which in Grecian art we call the Dorian Age, and which includes the centuries immediately following the Dorian invasion of Greece, about 1100 B.C., was marked by some interesting changes in architectural design. Some few of these developments were destined to have a great success and to influence the world of the eastern Mediterranean, but for the

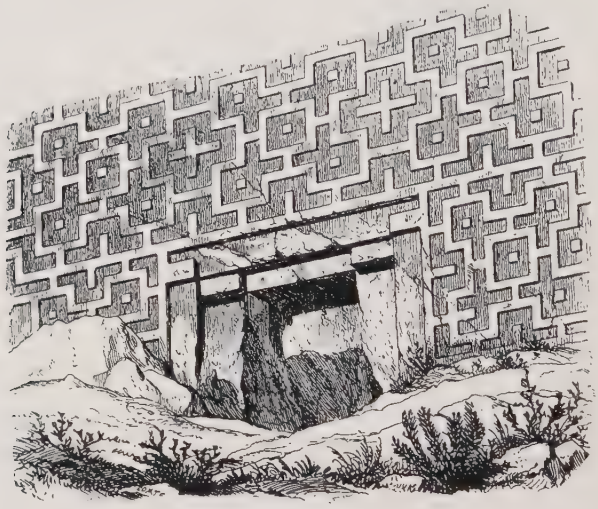
greater part of them, they are curious merely to archæologists, and have been without influence of any sort on later styles. The epoch is marked by the introduction of iron tools, though probably steel was not introduced until a much later period. These iron tools enabled the workmen to dress stone with much greater ease than had been done before, and yet, as is noticed more fully in Book III, the result of this improved condition is not at once seen in the architecture itself. Neither the plan of the building, nor the scheme of its structure, nor its ornamentation, shows, in refinement or in boldness, the result of this new superiority of the workmen in having these better tools.

Thus, in Lydia, that part of Asia Minor which occupied the west coast from Mount Temnon or Temnus and the city of Pergamon southward to the Mæander (about 39° to 38° north latitude), a great and prosperous kingdom in this Doric age, there has been found but little that is of the nature of fruitful conception in architectural forms or in decorative sculpture. In Caria also, the southernmost state on the west coast of Asia Minor, separated from Lydia by the River Mæander, there are no remains earlier than the time of advanced Grecian civilization, other than the simplest and most nearly non-architectural works of the mason. Walls of fortified towns, tombs of corbelled construction, in this respect not unlike those of Mycenæ (for which see Book III), and similar buildings depending upon the simplest method of piling stone upon stone, are all that we have. Of all these, the most interesting are the curious tombs, large chambers roofed with corbelled vaulting which differ from those of the mainland of Greece, such as the "Treasury of Atreus," in being square in plan. Some of them have, according to Mr. Paton's drawings,[7] a finish at the top exactly like those corbelled roofs of concave-rounded section which are found in Egypt, as at the temple of Seti I, in Abydos (see Figs. 10–11). These tombs are covered with tumuli of loose stones and earth. The very large and elaborate one given in drawings on pages 79 and 80 of the volume named in the footnote has two ring walls of stone, one 26 feet in diameter, the other 150 feet across: and this disposition suggests the stupas of India.

There is a second class of tombs excavated in the cliffs and hillsides and having curious façades cut upon a smoothed face of the native rock. The custom lasted so long in the mountain regions of central and southern Asia Minor, that the Grecian taste and the Gre-

[7] W. R. Paton: Excavations in Caria, in *Journal of Hellenic Studies*, vol. viii.

cian orders had come to Asia and taken control of the Asiatic methods of design while still these tombs formed an important part of the architectural works of the people. In Book III are given instances of this in connection with the apparent causes of the peculiar growth and development of the Ionic style in Asia. Earlier or non-historic tombs in Asia Minor have a peculiarly characteristic style of

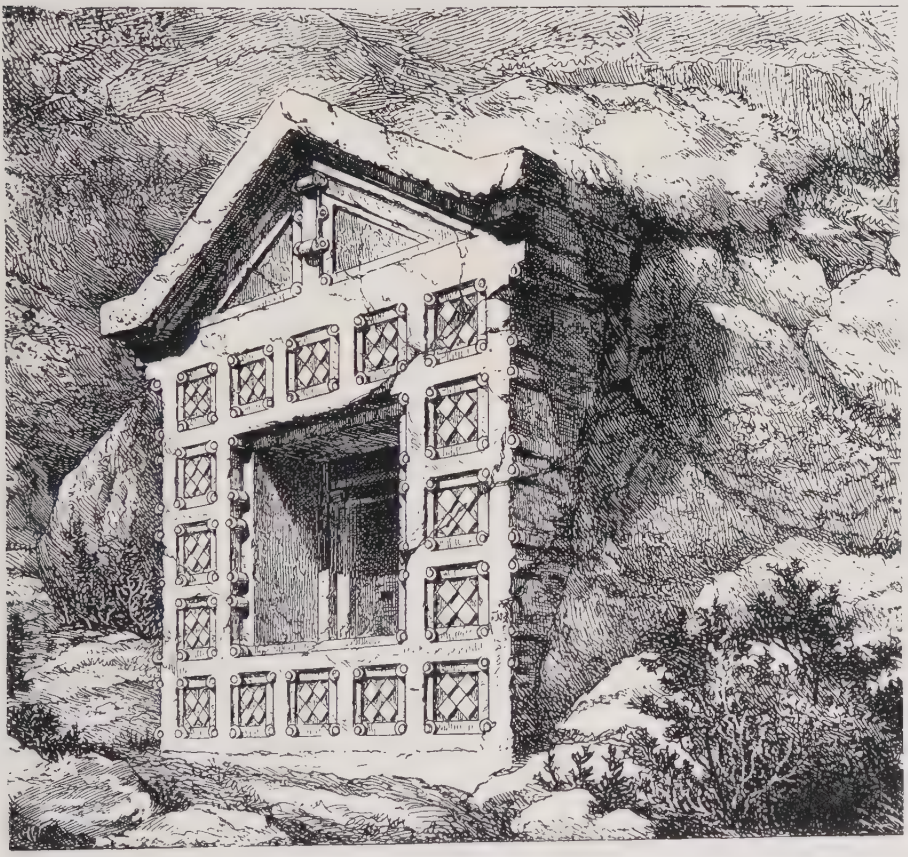


71—So-called Tomb of Midas: in the ruins of Meros in Phrygia, Asia Minor. (From P. and Ch., Vol. V.)

decoration, which interests the student of ornamental patterns and surface adornment more readily than the student of constructional architecture. Thus the façade of what has been called for many years the tomb of Midas, near Meros, in the heart of Asia Minor, has, spread all over it, one of those patterns of broken lines which are known as the fret or the meander, and which in Grecian architecture we associate with narrow bands only. These, when covering surfaces as wide as long, or high, we are accustomed to look for, rather, in the decoration of the Far East. The drawing (Fig. 71) gives a small portion of this only (a piece of the wall, about 50 feet in width), because the drawings sometimes published of this famous tomb are based upon the plate given by Texier.[8] The seeming doorway here is merely a recess in

[8] Charles Félix Marie Texier: Description de l'Asie Mineure, beaux-arts, monuments historiques, plans et topographie des cités antiques (1839 and later). The plates of this book are almost never accurate in detail. No pains seems to have been taken to verify them minutely; they seem to have been drawn from slight sketches, together with such recollection as might be in a draughtsman's mind a month later.

the rock, the true entrance being elsewhere. Fig. 72 is another such decorative rock-cut façade, drawn by the English explorers, Wilson and Ramsay. In these tombs there is always seen the same curious disposition of a well or shaft by which actual ingress to the tomb may be had, while the apparent door of the rock façade is merely a part of the decorative composition. It is a question whether there was any reason for these false doorways other than the instinct of a non-artistic people to preserve the features of an ordinary building. Those



72—Front of Tomb near Bekchich or Bakchich in Phrygia, Asia Minor. Drawing by Charles Chipiez after Wilson and Ramsay. (From P. and Ch., Vol. V.)

adorned by free sculpture are naturally the most important. Examples are given in Figs. 73, 75, 148, 153. Fig. 73 is one of those tombs made famous by Ramsay's journeys in Asia Minor, tombs sculptured in every case with lions in some group, some position, some general design. These lions are usually colossal, and always in what may be

called medium relief.[9] At a certain period, probably in the eighth or seventh century B.C., all the tombs of any importance seem to have been cut in the hillside, generally solid rock, and this may be considered as a definitely marked period of the hypogee, the rock-cut tomb like that of Egypt, succeeding the built-up tomb covered with a tumu-

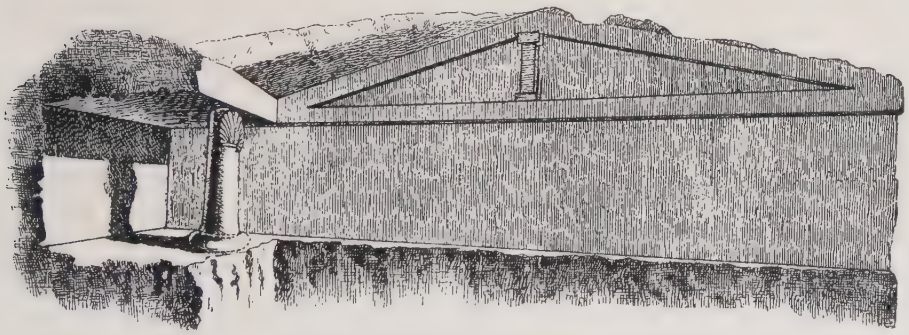
73—Tomb carved with two lionesses and cubs. Near Ayazeen in Phrygia, Asia Minor. (From drawing by A. C. Blunt, in *Jnl. of Hellenic Studies*, Vol. III.)

lus of loose earth and stone, as described above. In Fig. 73 it is seen that the rock was cut away so as to give a definite exterior to the tomb, though this was not architectural in appearance—a mere block or die. In Fig. 74 is given the interior of another tomb near at hand.

There is still a third type of tomb, which it is impossible to place chronologically. We must assume that the tombs about to be described are nearly contemporaneous in their origin with the rock-

[9] See, for further development of this as yet little studied subject, W. M. Ramsay: The Historical Geography of Asia Minor, a publication of the Royal Geographical Society; and the same author's papers in *Journal of Hellenic Studies*.

faced hypogees considered in the last paragraph, if not also with the earlier tumuli. These are tower-like, free buildings, showing a close imitation of wood-framing carried so far that the only artistic thought discoverable (apart from carved ornaments) is the close copying in cut stone of an actual timber framework. Similar tombs are found in Lycia, that state of Asia Minor which occupies a slightly projecting peninsula on the southern coast, and which lies between longitude 29° and 30° east from Greenwich. There, among the ruins of Xanthos, a tomb was found, whose design it is impossible to describe in other terms than those applicable to a solid frame of heavy timber. Fig. 75 shows this tomb, which was thought so important and was in such good preservation that the great task of transporting it to the British Museum was safely carried out. It is about 21 feet high, above the broad step which serves as a base, and it is composed of three chambers, one upon another, each apparently serving as a sarcophagus and all crowned by the ponderous block which is carved to resemble a double pitched roof with curved slopes.[10] The sculpture is of late date. It is even of a time later than that of Phidias; and it has been assumed



74—Interior of Tomb at Ayazeen, "Broken Lion Tomb." (From drawing by A. C. Blunt, in *Jnl. of Hellenic Studies*, Vol. III.)

that it was worked upon the marble 300 years after it had been put into its place in this monument. It is evident, however, that the whole monument is of the uncertain period now under consideration. The sculpture may be of the original epoch of the tower, if we can imagine this fancy for imitative design lasting for five or six centuries.

[10] This tomb was found by Charles Fellows (afterward Sir Charles) in 1838, and is described in his volume, A Journal Written during an Excursion in Asia Minor, in which there are also two reproductions of his drawings showing the condition of the tomb when found. Photographs made in the Museum are badly lighted.

75—Tomb from Xanthos in Lycia; now in the British Museum. (From a drawing by Viollet-le-Duc, Entretiens, pl. I.)

Some time between the age of the Homeric poems and the time of Alexander the Great this piece of sophistication was set up and hewn into shape, and it is curious to see the artists of a period following the greatest achievements of Babylonian and Assyrian art descend so low

in the intellectual scale as to undertake so poor and slight a feat as this of the imitation of wood-framing in so elaborate a stone-built monument. The closeness of the copy from wood-construction is established by comparisons made with the now existing timber-built structures of southern Asia Minor. Such buildings are described and illustrated in the great work of Benndorf and others,[11] where also are enumerated the numerous stone monuments of this class, found at Limyra, Sidyma, Xanthos, and Kyenai, and the island of Kekowa; while at Makri one such tomb stands several hundred yards from the beach, in the shallow and tideless sea. The type seems to have been very permanent; and, alike in the free-standing monuments and the rock-cut façades of this class, the imitation of solid timber-framing is complete. Heavy sills support stout corner-posts and other such uprights, too heavy to be called studs, and these carry horizontal interties and plates—the whole is explicable only in terms of carpenter work and house-framing.

Even in cases in which another influence has been at work, and a tower of a form more consonant with stone construction has been adopted, this tower will be found associated with rock-cut decoration, still closely imitated from timber-framing. Thus, the tower at Xanthos (Fig. 76) reproduced from the volume of the work on Asia Minor named above, shows what is apparently an afterthought, a new feeling stimulated by Grecian example of a later time, in the placing of that impressive square upright shaft above the rock caves of an earlier date. It is probable, indeed, that the same individuality dictated both these references to an art not thoroughly understood. The same artist or artists working for the same family of influence copied an older work in the carved faces of the rocks below, and followed the new western leading in the tower above. The famous Harpy Tomb, of which the remarkable sculptures are in the British Museum, is not now recognizable, because of that very tearing from it of its sculptures, which has enriched the London institution. Its ruins stand on the hill above the theatre at Xanthos, close beside another tomb of that curious Lycian type illustrated in our Fig. 75, but its form was as strictly that of a square tower as the one in Fig. 76. It had, indeed, the added architectural adornment of a band below the cornice, with

[11] Explorations in Asia Minor, in two separate volumes, viz.: Reisen in Lykien und Karien, by Otto Benndorf and George Niemann; Reisen in Lykien, Milyas und Kibyratis, by Eugen Petersen and Felix von Luschan. Vienna, 1884–89.

76—Rock-cut tombs surmounted by tower-tomb, at Xanthos, Asia Minor. (From Benndorf and Niemann.)

relief sculptures arranged like those of the naos frieze of the Parthenon, or that in the interior of the temple at Bassai (for both of which see Book III). In this, as in the Lycian tomb (Fig. 75), there is the question of the Grecian sculpture with the Asiatic and local architectural conception.

It remains to treat in this chapter a few as yet unexplained phenomena of the Mediterranean lands; all of which seem to be connected with the Phœnicians, that people of merchants and navigators who have left no national nor racial art which can be recognized. In Malta, Cyprus, Carthage, and the African coast of the Mediterranean, in Sardinia and the Balearic Isles, most of all in western Syria, are found the scattered remains which are called Phœnician. One peculiarity, which has been noted by all students, is the constant use of cutting in undisturbed rock. Ernest Renan observed in 1860–61 [12] walls of fortresses and dwellings cut in the rock. Moreover, in their capacity of a Semitic people of no special artistic power, they show a love for heaving up and putting into place the most enormous blocks of stone; as in the ancient substructures of Baalbek (see Book V) and in those of the Temple of Jerusalem, as explained below. Traces of mortar masonry have been found, also, as would be natural to a people studying their arts in the school of Chaldea. In short, the Phœnicians are for us, in the present state of our knowledge, the carriers to lands beyond sea of the arts developed on the Nile and in Mesopotamia, rather than originators.

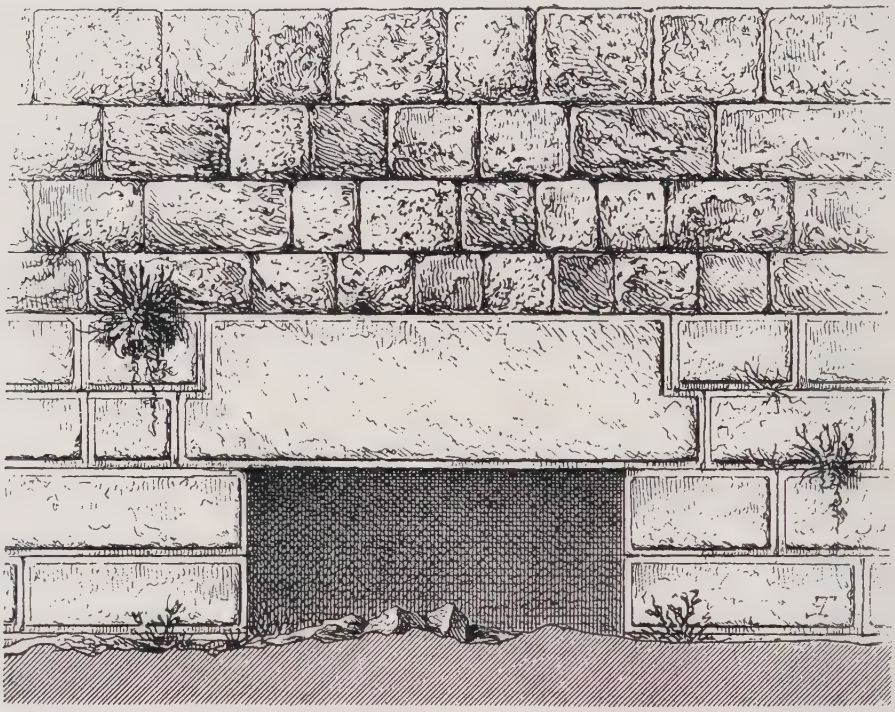
The art of the Hebrews seems to have been a reflection of Phœnician art as modified by the far more powerful Assyrian methods in sculpture. To the Phœnician influence belongs the disposition to use enormous stones in the construction of walls, as seen in the well-known instance of the retaining walls of the Temple platform at Jerusalem. The willingness to spend time and careful work in the exact squaring and facing of enormous blocks and of the smaller but still huge stones which accompany them in the wall, the cutting of very delicate drafts [13] on every side of the face of a square block, and the leaving of the face, within the draft, of a definite and accurately

[12] Mission de Phénicie, 1865 and following years, folio and 4to.

[13] Draft: a border made along the edge of one face of a block of stone, usually by chiselling off the roughness until a perfectly true surface is reached as wide as the edge of the chisel. Four such drafts are cut along the four sides of the face of the block, and these are kept in one and the same plane. An inferior workman can then work down the stone to a level, either continuous with the drafts, or higher, more projecting than they.

measured projection, all are familiar features of the stone buildings in Syria from immemorial times, and down to the late Roman monuments at Baalbek.

Fig. 77 is a part of the earlier work about the Temple of Jerusalem, one of the doors in the outer wall, with a lintel of 19 feet unsupported



77—Huge lintel in substructure of Temple of Jerusalem. (From De Vogüé, Temple.)

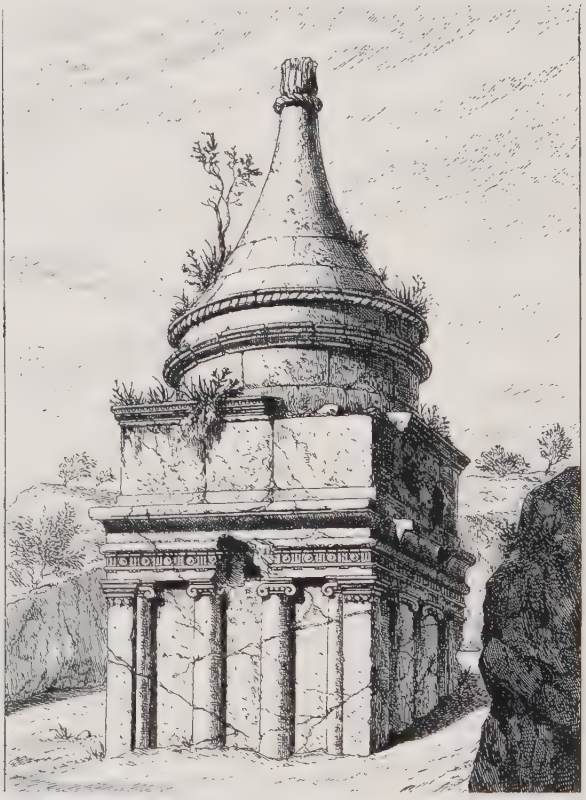
span, and having a vertical dimension great enough to enable it to support the unexampled load upon it. The more elaborate buildings of the Temple, those upon the great platform and serving the need of the worshippers and the priests, are unrecognizable now. They have been rebuilt many times and destroyed as often, and that very freedom of the Roman builders of the second century A.D. in adapting to their own uses so many traces of the local architecture in every province, has given us what is indeed a most curious study for the architecture of the great empire, but has ruined our chances of studying Hebrew architecture in its central prime. The very curious and even valuable designs connected with the dipylon, or double gateway, and the Golden Gateway, are more Roman than Oriental. On the other hand, the

very curious ruins given by the Count de Vogüé,[14] the buildings at 'Arak-el-Emîr, stated to have been built about 180 B.C. and accepted by archæologists as probably of that epoch, show a most curious mixture of Eastern and Western influences. The frieze of animals, as large as life and very plainly sculptured, without accompaniment or background, is Persian in spirit; but the building seems to have been designed by some one whose eye was fixed upon the buildings in Syria. In like manner all the ruins in Palestine which have been examined partake of a mixed character; not one is Oriental of a single recognizable type; nor can we, on the other hand, identify a single building as the work of any Hebrew king. Most interesting studies have been made, using the description in the Old Testament and the few remains now traceable, to restore in imagination the Temple, not of Solomon, but of Zerubabel. One of the most interesting of these is by that able and indefatigable artist, Charles Chipiez, but it is a curious intellectual study of the thoughts of a master of architectural art upon the Assyrian methods of building and designing—it is in no way identified with any supposedly Hebrew processes of thought or methods of working. A curious instance of the uncertainty accompanying all these ruins in Palestine is found in those tombs near Jerusalem of which the most important is popularly known as the tomb of Absalom (see Fig. 78). This building is generally assumed by writers on the architecture of the Levant to be a work of the Roman decadence, that is to say, of the third or fourth century A.D., but it is also ascribed by good authorities to the time of that post-Alexandrine kingdom of the Seleucid kings (Seleucus Nicator and his successors). There are also those who hold that it is really Hebrew, or at least Syrian work, that the Ionic order and the Doric frieze, built very crudely, barbarously wrought, are of Greek and not Roman inspiration. In like manner the rock-cut tomb given by Cassas[15] is of a far purer style and approaches nearly to Grecian Doric, as if the artist had studied buildings of Greek origin. But close to it and given by the same explorer

[14] Le Temple de Jérusalem, plate 34, with the text. See also comments upon this building, Perrot & Chipiez, vol. iv, pp. 209–211. This volume of "L'Histoire de l'Art dans l'Antiquité" gives 150 octavo pages to an attempted restoration; and this forms a valuable study of ancient Eastern methods; but the Temple as shown in the restorations is that of Ezekiel, chap. xl–xliii, a building which never existed as described, but which was the imagined replacing of the destroyed Temple of Solomon.

[15] Voyage pittoresque de la Syrie, de la Phénicie, de la Palestine et de la basse Égypte (in folio, 1799), v. iii, pl. 36.

is a tomb with an elaborate rock-cut façade which shows no inspiration except that of Mycenæan art, and even this of a corrupt type, as if carried out by men having no traditions and no trained judgment in design. We are driven to remember that Syria has always been a field of battle and even of conquest for one nationality after another.

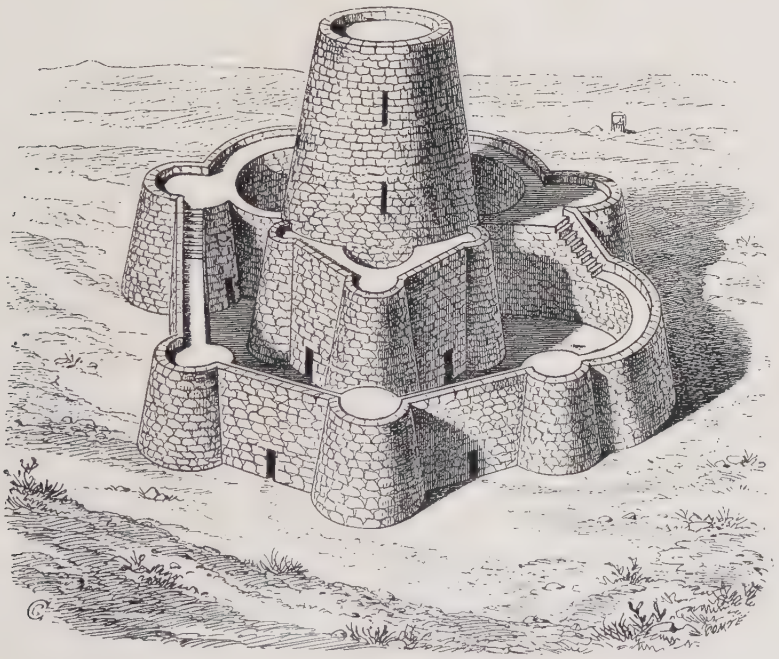


78—So-called Tomb of Absalom near Jerusalem: second or third century B.C.
(From de Saulcy, Voyage autour de la Mer Morte.)

Egyptians, Babylonians, Assyrians, Persians, the Macedonian followers of Alexander the Great, all succeeded one another, and besides these there have been those half-traced influences which we call Hittite and Phrygian; and all these influences have so counteracted one another that whatever indigenous taste and tradition there was in central Syria—that is to say, among the Hebrews—has perished, or is absolutely confounded with the arts of other races.

Sardinia, that great island which is near to the most civilized lands at once of antiquity and of the modern world, and which is yet almost

unknown to history, possesses a great number of strange stone buildings. The name nurhag is applied to a structure unknown elsewhere in the world. Much smaller towers of similar masonry exist in southern Italy, and are called forts, but the nurhags seem to be the indigenous and original type. Fig. 79 gives a restored view of the Nurhag Ortu, and Fig. 80 a plan of it, both taken from the work of Perrot & Chipiez, but the plan is accredited there to La Marmora.[16] There can be little doubt of the accuracy of the restoration except as to the crowning of the wall—as to the exact size and character of the parapet which protected the defenders standing on the flat roof; but this is of the very greatest importance. There can be but little doubt that these are intended to be defensible buildings, though not strictly fortresses; and

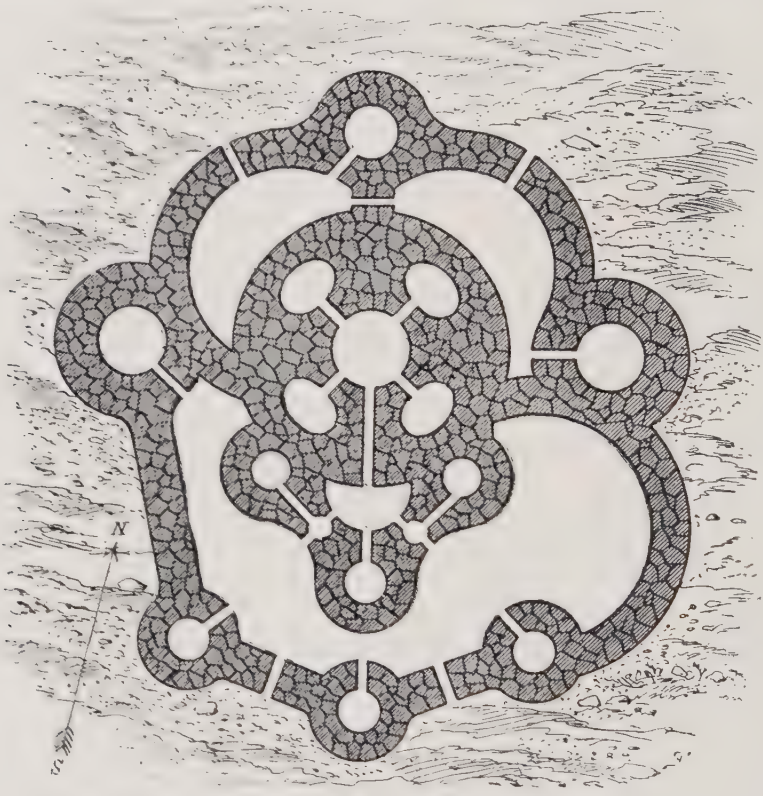


79—The Nurhag Ortu, Sardinia, as restored by Charles Chipiez. (From P. and Ch., Vol. IV.)

here, as always before the introduction of cannon powerful enough to break stone masonry, defence is vertical; the defenders occupy the top of the wall, which is made as high as practicable, the height increased, moreover, by a surrounding ditch. The nurhag given here is much the largest of all, but there are at least twenty-five more of

[16] Perrot & Chipiez, vol. iv, 35–36. La Marmora, Voyage en Sardaigne.

notable dimensions, and conservative statements are to the effect that at least 3,000 are traceable in the island. Some of them are single conical towers, others form groups, and all are built solidly of shaped stones. The question as to their purpose is absolutely unanswered as yet. Their date, also, is a matter of pure conjecture. One guess which seems to be as reasonable as others is that they are exactly what



80 Plan of Nurhag Ortu (see Fig. 70). (From P. and Ch., Vol. IV.)

the watch towers of the Caucasus are (see what is said in the third volume of the villages of Svanetia). In like manner they can be compared to the fire-proof tower or "godown" (Kura) attached to a dwelling in a city of China and Japan. There are also in Sardinia very curious tombs marked out with circles and low walls of stone, and associated with very large upright stones, but they are prehistoric monuments of no architectural character deemed to come within the scope of this work.

CHAPTER IV

UNCERTAINTIES AND DIFFICULTIES

IF we start an expedition from a seaport of northern Syria through Aleppo, either eastward through northern Syria or northward into the mountains of Asia Minor, or if we follow the track of Ramsay, twenty years ago, we shall find, as we enter one village after another, traces of ruined buildings which we shall then proceed to explore. Rising from the surface of a site evidently levelled and smoothed by the hand of man will be stone walls two or three courses high, or in other parts wholly broken away and destroyed; but the architectural eye and some imagination will enable the explorer to trace the plan of a building which, from its numerous broader and narrower subdivisions, must be a residence—a palace from its size—and of much former solidity. If the explorers stop their journey, if they get a comprehensive firman from Constantinople, make friends with the local Turkish authorities, buy the goodwill of the people by very liberal payment and work offered every one, they may, in the course of three seasons' work, discover a new civilization, at least in architecture. Again, they may be greatly disappointed; and, while what they find supplies one more chapter in the history of the late Greek or late Roman artistic conquest of the East, they will fail to be considered the pioneers in archæology which they had hoped to be. The newly explored building may prove to be the first found ancient Hittite building; it may prove to be Phrygian of the tenth century B.C.; it may prove to be of an epoch and a people as yet without recognition in our records. If, however, the special work involving time and expense cannot be given to this site, and to these remains, the expedition goes by, recording merely the discovery of a foundation of such and such character, and of inscriptions which they could not bring away but of which *these* are the squeezes and *these* the photographs. Of this character is nearly all

our knowledge of those different succeeding waves of artistic civilization in Western Asia. And there is still this distinction to be noted, that a relief sculpture on the face of an already exposed rock may tell or suggest a great deal—as that the people who wrought it were unversed in the use of iron tools, or that the inscription mingled with the figures must be of later time than the figures, and that in this way the monument is a twofold mystery. In this way the history of sculpture is greatly advanced, whereas a similarly interesting discovery in architecture would mean days of digging and of bringing to light walls and shattered columns buried in the soil; and the bringing together and comparing of carved stones broken into many fragments. The books mentioned in the footnotes are to be consulted by any one wishing to go further into this curious maze of suggestions, of inferences, of imagined discovery, and of hope. No part of the whole field can be said to be so far known to us that the "history" of architecture can include it. Of Phœnician art we have nothing but an apparent trace of rock-cut buildings on the coast, and of two or three minute shrines; and this subject has to be studied in the islands of the Mediterranean and in Carthage and Utica, with their neighbouring villages—a region so thoroughly rebuilt by the Roman colonists that research in this direction is made peculiarly difficult. Of the Hittites not one building has been identified. So with the other peoples and powers named above; it is not they to whom we can accredit any monument found in Asia Minor or Syria, or even of the islands of the sea. All the historian can do is to mention a monument, if one of the very few which have architectural interest, and to state that a controversy is raging about its probable associations, ethnic and chronological.

BOOK III.—GREECE

CHAPTER I

THE PRE-CLASSIC AGES

WHILE the early chronology of Egypt is in dispute, that of Greece is wholly a matter of hypothesis. In Egyptian history we know much of the succession of events; and the differences between archæologists are found, chiefly, in the manner of interpreting inscriptions and the inference to be drawn from astronomical data. In Greece, on the other hand, there is simply no basis for precise fixing of dates. We find buildings of evidently great antiquity in the mainland of Greece, but they bear no cartouches, nor any inscriptions fixing their place in the sequence of settlement, of conquest, and the relations of states. We find others of kindred nature in Asia Minor and in the islands of the Mediterranean. We agree upon certain terms for the artistic and industrial epochs which those buildings represent, but those epochs cannot be fixed chronologically. They cannot even be fixed, as the epochs of Egyptian buildings are fixed, relatively; that is, in the sequence of events though not by absolute dates. There was an artistic civilization which we call Mycenæan, from the name of the capital city of Agamemnon, Mycenæ (Mykenai), and the Mycenæan art is traceable in many lands of the Mediterranean. It is quite agreed among historians that the Mycenæan epoch was followed by a period of much lower artistic and industrial civilization; and it is thought that this period was followed immediately by the epoch of the Homeric and other epic poems. If then we reckon backward, as is usual in these experiments in early chronology, and if we say that the period in which Hesiod lived was about 800 B.C., and the period of Homer about 900 B.C., it follows that the period represented in the Iliad and Odyssey and other lost poems of the same epic cycle embraces the years between 1100 and 900 B.C. A poetical narrative naturally draws its illustrations and its

romantic incidents from times a little more ancient than those in which the author does his work.

It is generally agreed that the remains of the period 1100–900 B.C. are far less interesting than those of Mycenæ, Orchomenos, and Tiryns —for they show a much lower tone of artistic design and much less ambition in the way of producing important buildings. It is an accepted theory that Homer's Palace of Alcinous and his Palace of Odysseus, as described in the Odyssey (Book VII, Books XVIII–XXIII), are conceptions of buildings of that inferior artistic period, 1100 to 900 B.C., which we call the Period of the Epic, or the Heroic Period. A Mycenæan Palace, like that found at Tiryns or at Mycenæ itself, with its elaboration of plan and its wall paintings and glass inlay, would have suggested to Homer a more splendid picture than he has offered us. The Dorian invasion, named below, may have tended to crush the earlier and more artistic civilization. Since the explorations in Crete (1900–4) archæologists have sought to divide up the important artistic age, assumed above to end about 1100 B.C. There have been named the Ægean period (concerning the islands of the Ægean sea); the Cretan period, and the Mycenæan period, these names standing for three divisions of a great prehistoric stretch of time marked by the artistic remains which have been discovered. The Ægean period is put by Professor Reinach at 3000–2000 B.C.; the Cretan period at 2000–1500 B.C., and the Mycenæan period, considered as in some ways a decadence, at 1500–1100 B.C.; ending with the Dorian invasion and the disappearance of the ancient semi-Asiatic art spirit. These periods are not as yet very important in purely architectural history, because the artistic character of their buildings is unknown. Some plans have been made out, and the comparison between them found to be most interesting, as where the later palace at Nippur in Mesopotamia is found to be very like that at Tiryns.[1] Some carvings and paintings of semi-architectural character have been discovered, and the decorative design of the time in stone-cut incised patterns and inlay of blue glass, metal applications, and pottery begins to be understood, but as yet no architectural composition of the earlier ages has been brought to our knowledge. We build up in imagination the pavilions and halls which we think must have risen from the ground plans we trace—but that is all. This is largely true of the Mycenæan

[1] C. S. Fisher, Mycenæan Palace at Nippur, in *American Journal of Archæology*, Second Series, vol. viii (1904).

period as well, and yet the residence buildings of Mycenæ and Tiryns are worthy of study.[2]

The Dorian period begins about 1100 B.C., and the Mycenæan civilization forms a chronological period ending at that time. It is within that period that the citadels and palaces of Mycenæ and Tiryns were built, and that the goldsmiths' work, wall paintings, glass inlay, and other decorations found there were produced. The palaces in Crete (still more elaborately adorned, and having bas-reliefs and paintings of great variety), and the palace at Nippur in which a Mycenæan plan has been carried out in a country where clay was the only building material, are also of this epoch.

During the Mycenæan age proper—that is, before the general use of iron tools—the decoration of buildings is made up partly of colour, both inlay and paint, but also in part by that kind of carving which we call incision for want of a better name. If the stone-cutter lacks either the knowledge or the strength to carve figures in relief, cutting away the background, or to carve figures in concavo-convex relief, as so common in the Egyptian monuments, or if his tools will not enable him to carve freely in the stone which is at his disposal, he can at least cut and rub a groove, as noted in Book I, Chapter III. By cutting and rubbing a sufficient number of grooves he can make a pattern of straight or curved lines, or one more elaborate by causing those lines to assume the appearance of bands which interlace, producing a basket pattern or a guilloche. Moreover it is not hard to fill up the incised lines with some coloured material, and in this way approximate closely to the inlay of blue glass mentioned above. Even if the incision is not filled up flush with the surface, it can still be coloured, the painting or gilding being somewhat protected by the sinking of the lines. It is noticeable that the more elaborate patterns common in the wood-carving of the South Sea Islanders and other primitives are never found in these pre-Hellenic decorations. The carver of a paddle in the Solomon Islands or in New Caledonia reached a degree of artistic skill in the arrangement of his triangles, and his little sunken squares with ridges crossing them, left in the solid wood, which the early Greek does not seem to have thought of or cared for. His harder material and his strong desire for more fluent and flexible patterns kept him from the development of simple zigzag and diaper of straight lines, and he waited, one may say, for better tools that he

[2] But see in Book II what is said of the columnar structure at Tell-Lô.

might develop at once relief sculpture in the true sense of that word. The relation between this curious limiting of the decorative powers of the early Greek and the fact, which is mentioned frequently in this Book, that the Greek architects never developed architectural sculpture, properly so called, into a varied or very effective system, is subtile and interesting and has not been worked out, as it would seem. We find the later Greeks developing the study of the human form into previously unmatched and never thereafter to be equalled excellence; but we find the secondary decoration of the same period limited to the succession of palmettes and ivy leaves, and the contrast of the rounded with the pointed forms, as in the different frets and egg-and-dart mouldings by which the architectural members were marked out. In this way it seems as if the limitations forced upon the Mycenæan builders were preserved in a traditional way by their successors, even when armed with excellent tools and possessed of profound knowledge.

Still another system of decoration was used, which has had no marked effect on the art of succeeding ages. On the inner face of the walls of the beehive tombs described below there are found bronze pins, and holes from which other bronze pins have fallen; and these insertions in the wall are put in at regular intervals and with, apparently, a decorative purpose.[3] Fragments of bronze discs have been found among the rubbish, and the general conclusion has been that these bronze plates, rosettes and flower patterns and the like were secured to the stone walls at equal intervals, producing what we call a *semé*; that is, a pattern made of isolated and evenly spaced figures.

It is noticeable that in an age when the extraction of large blocks of stone is difficult and their transportation beyond the means of the builders, a columnar architecture cannot develop itself. We find in a later period the Hellenic spirit turning almost exclusively to trabeated structure and columnar design, and we account for this in a natural desire, in a warm and not rainy country, for shelter from the sun; and therefore for roofed open porticos. But porticos and roofed halls can be built only of wood until the time comes when suitable stone is easy to procure; and this wooden post-and-beam construction has perished. Accordingly the only vestige of columnar architecture which the Mycenæan epoch still offers is found in the columns which serve a purely decorative purpose, flanking the doorways of entrances to

[3] An interesting conjectural restoration by Charles Chipiez is given in Histoire de l'Art dans l'Antiquité, vol. vi, plate vii.

tombs and to fortress walls. These columns are found to have their shafts tapering downward, the smaller end below, and this is an immediate and close copy of the conditions in early wooden building. Even in the nineteenth century, simple buildings in the West Indies included palm-tree trunks used in precisely this manner—the large end uppermost. The tree trunk turned with its larger end uppermost carries the wooden lintel or girder better than if it were reversed; while on the other hand the smaller end downward is more easily housed in the stone-cut base in which it is to be set. All these conditions obtained in this early columnar decoration, as in the wooden pillars which supported the roofs of the larger houses. The gate of the "Treasury of Atreus," illustrated below (Fig. 82), was flanked with two such columns, fragments of which have been found on the spot.[4]

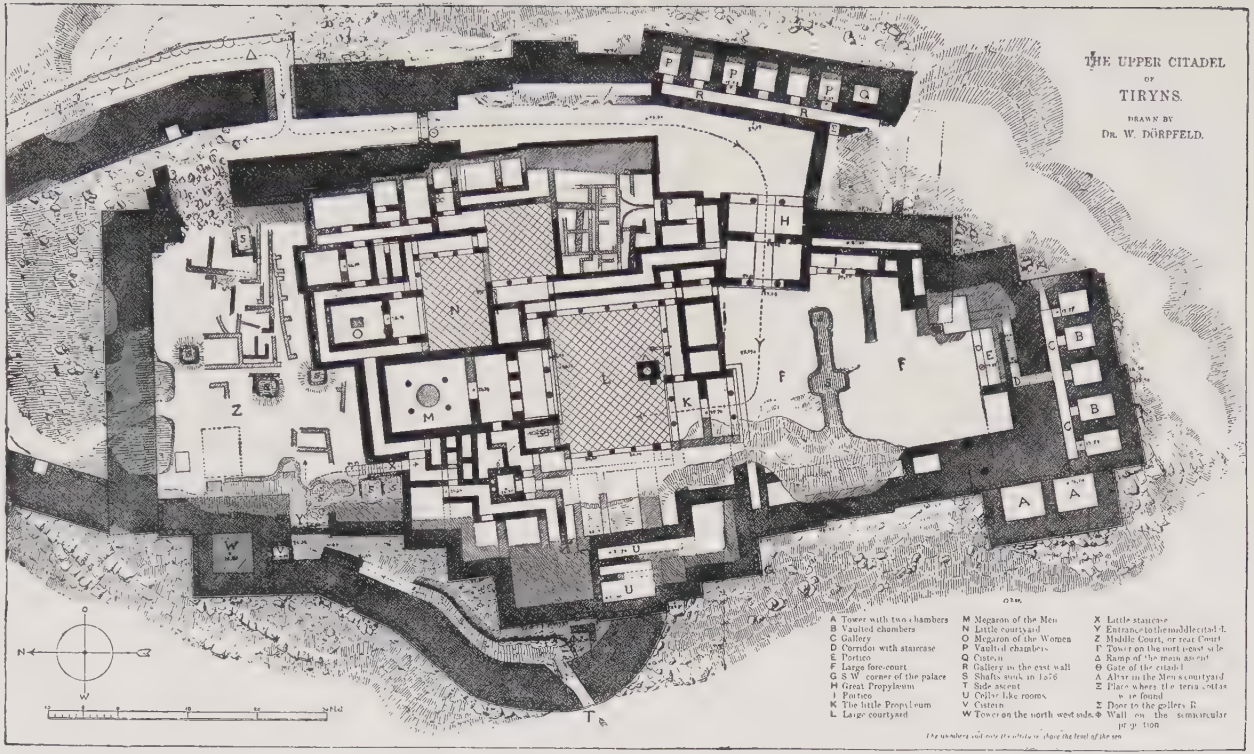
What was formerly called the Return of the Heraclidæ, and is now known as the Dorian Invasion, is generally dated at 1100 B.C. It may be that a general invasion of the south by northern barbarians took place then, as again, fifteen centuries later. At least the mountaineers who were to be the leading race in Greece proper at a little later time took possession then of the Peloponnesus and much of the more northern territory of Greece, but generally excluding Attica, which remained in the hands of the Ionians. It appears too that the artistic civilization of the earlier ages lingered on in the islands of the Grecian sea, and influenced Phœnician art, as shown in Book II. It may be that the northern barbarians drove before them those who could escape from the lands they occupied. It may be that these fugitives settled in Syria and built that palace at Nippur already mentioned. Or it may be that some strong region, secure behind the bulwark of the sea as Constantinople was behind its walls and its fleets, during the dark ages of Europe (500 to 1100 A.D.), sheltered those more refined arts which perished elsewhere, until they could return to their old home in Greece, as the arts of the later period returned from Constantinople to Italy. At all events it may be assumed that in Greece itself the newcomers destroyed the more artistic civilization of the earlier race—the Argives as we call them sometimes—and brought into Greece those hard, unrefined, and severe customs and laws which we find reflected in the later civilization of Sparta ("the

[4] See the conjectural restoration by Charles Chipiez, Histoire de l'Art dans l'Antiquité, vol. vi, plate vi.

laws of Lycurgus"), while the more humanized race of Ionians retained in Attica some of their earlier artistic and literary enlightenment. All this is highly conjectural, but of this nature is all the history that we have for those earlier times. It is curious that this epoch (1100 B.C.) is taken by many as the beginning of the Iron Age, that is, of the free use of iron tools; and that this great advance in human capacity did not lead at once to any improvement in design nor even to greater skill in construction.

The earliest buildings of Greece with which we are concerned are, then, those ruined fortress-palaces which exist upon hill-tops on the eastern coast of the Peloponnesus. It is quite certain that the names given by the moderns to those ruins—Mycenæ and Tiryns—are correct. Those ruins were uncovered and explored by Henry Schliemann between 1870 and 1885, and the plans of them are not only open to study by modern scholars, but are capable of almost complete explanation.

Now the ruins of Mycenæ and Tiryns are the only considerable remains in Greece which are certainly of the "Mycenæan Age." Buildings of residence and state, with but small shrines of worship, are known to us so far as their general disposition is concerned. To this, however, our knowledge is limited. We can, indeed, state that the Megaron or great room, the common sitting-room of the men of the establishment, was of certain length and breadth and had a roof supported on four columns, and we can infer that a clear-story or open lantern for ventilation was raised upon these columns and above a fire-hearth in the middle of the room. We can infer, also, that there were no skilful carpenters, no framers of trusses, since even a room of moderate size required columns or posts to carry its roof; but our knowledge stops there. The style of the columns themselves is not known, and they were probably of wood. The design of the roof and even its height above the floor, and the character of its external roofing material, are all unknown. Fig. 81 shows the plan of the upper citadel of Tiryns as laid bare by Schliemann's excavations and as studied and plotted by Dr. Dörpfeld, of Athens, a most competent authority and a sagacious guide in architectural archæology. The enormously broad foundations of the outer wall can be identified without explanation. This heavy wall consisted everywhere of masonry of rather large stones, originally laid in clay mortar, which is now mainly washed away. We are to con-


THE UPPER CITADEL
OF
TIRYNS.
DRAWN BY
DR. W. DÖRPFELD.
A Tower with two chambers
B Vaulted chambers
C Gallery
D Corridor with staircase
E Portico
F Large fore-court
G S.W. corner of the palace
H Great Propylæum
I Portico
K The little Propylæum
L Large courtyard
M Megaron of the Men
N Little courtyard
O Megaron of the Women
P Vaulted chambers
Q Cistern
R Gallery in the east wall
S Shafts sunk in 1884
T Side ascent
U Cellar-like rooms
V Cistern
W Tower on the north-west side
X Little staircase
Y Entrance to the middle citadel
Z Middle Court, or rear Court
Γ Tower on the north-west side
Δ Ramp of the main ascent
Θ Gate of the citadel
Λ Altar in the Men's courtyard
Σ Place where the terra-cottas were found
Σ Door to the gallery R
Φ Wall on the semicircular projection

81—Plan of the fortified palace of Tiryns, as plotted by Dörpfeld. (From Schuchhardt.)

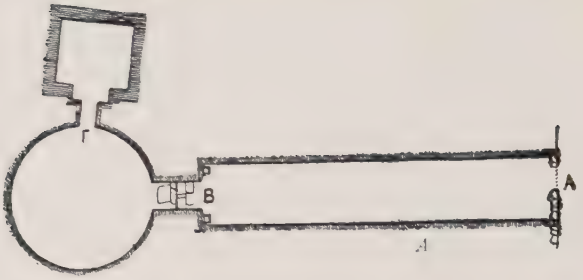
sider this soft but soon hardening material as used chiefly to give, easily, a solid bed to rough-hewn stones. Mortar of an adhesive quality was not known at this time, except that when building in crude brick the same clay, made more liquid, was spread between the layers.

The thickness of the wall, from 12 to 20 feet, allowed a gallery in the mass of the wall at a certain height above the foundation. This gallery was evidently connected with the defence of the place, for these palaces were also fortresses, the last resort of the assailed native prince and his followers. All the stone masonry must be considered as a substructure for the walls of unfired brick which have very generally disappeared, partly because of misunderstanding on the part of early explorers. Little attempt was made, however, to produce a lofty wall; and in this way the distinction between these defences and those of Roman times and of the Middle Ages is very noticeable (see the discussion of systems of mediæval fortification in the second volume). Apparently the rugged cliff which bounded the citadel hill was relied upon to give the commanding height needed for defence, for the staircases leading up from the citadel below are narrow, and so planned as to be easily defended, the assailant exposing himself to be quickly overwhelmed by missile weapons from above. The approach for a beast of burden, or probably for a litter or a wheeled carriage, is up the slope marked Δ, outside the wall, and then following the arrows through the outer gateway. But once the intruder had passed that outer gateway, he was left in the roadway between two rather high and very massive walls occupied by the soldiers of the garrison, and for a distance of 150 feet or more would be exposed to missile weapons from both sides. Peaceful visitors would go southward by this road through the inner gate, and turn westward, passing through the outer propylaia, *H*, and again through the inner propylaia, recognizable by two porticos of two columns each, to the largest of the enclosed courts, *L*. From this court, going north, the access to the Megaron was through a double portico, and through the colonnade on the eastern side one had access to the two smaller court-yards upon which the rooms of the women opened. *A*, *B*, *C* and *P*, *Q*, *R* are chambers in the outer walls which were probably mere storerooms, allowing of the safe-keeping of grain and other provisions in a tolerably dry and quite secure condition. The gallery and the chambers are generally closed at top by stones projecting, course beyond course, and with flat beds,

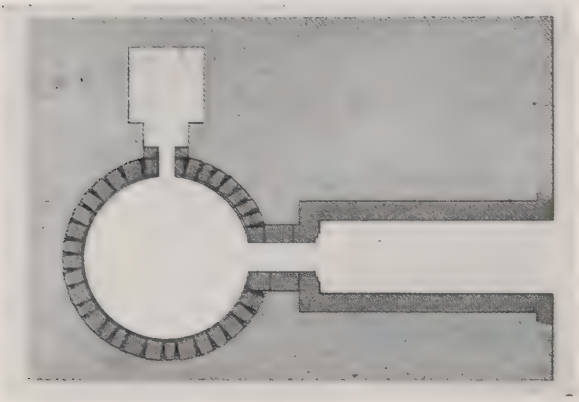
as explained below in connection with the beehive tombs of Mycenæ. In parts of the gallery something like real arch construction has been reached, as if accidentally, a stone slipping down between two others, and wedging itself there.[5] The entirely non-architectural character of all this masonry prevents it from helping our study very much: for it is not more significant of artistical and industrial conditions than are the dry stone walls which separate the fields of New England farms. The plan, however, points to the architectural design of the future. This early appearance of the broad and architecturally important entrance, made by two or more columns set between two ends of walls (parastades) suggests the later supremacy of columnar architecture in Grecian civilization. The use of one column only, half-way between two piers, is, indeed, almost unknown; but see a possible instance in the temple of Bassai near Phigaleia (see Fig. 137).

Certain very simple structures at Mycenæ, without the walls of the citadel, were known to modern Europe before the discoveries of Schliemann and others, named above. They are described in the earliest modern books of archæology, and they have always attracted attention as apparently the earliest stone structures in the south of Europe. Such a structure is that circular beehive tomb which was called formerly the Treasury of Atreus, but is now accepted as a tombal chamber, drawings of which are given in Fig. 82. Its peculiarity is that, starting from a circular ring of stones 48 feet in diameter, it is carried up by one ring after another, all the stones laid with a flat bed but constantly overlapping on the inner side, each ring somewhat less in diameter than the ring below. This diminution is continuous, so that a section through the chamber shows a curved line of the general shape of a pointed arch, which would end in a sharp, hollow point but for the final closing of the opening at the top by a single slab. This kind of building, which exists in Egypt and indeed is very common in early times, has been called commonly false vaulting, or a false vault. It is really a corbelled structure, and is evidently capable of the greatest permanence, provided always that the tails of the corbel stones (that is, the ends projecting inward and held by the solid mass behind) are securely held down by a sufficient weight. In the case of these tombs,

[5] Drawings of the rough stone walls with the chambers reserved in the solid mass are given by Perrot and Chipiez, and occur also in books especially devoted to the discoveries of Dr. Schliemann, such as his "Tiryns," and his "Mycenæ," and Schuchhardt's "Schliemann's Excavations."



A



B

C

52—The tomb of Mycenæ, anciently called Treasury of Atreus. *A*, the plan as given by Tsountas and Manatt. *B*, the same; *C*, the section (both from Gail., Monuments).

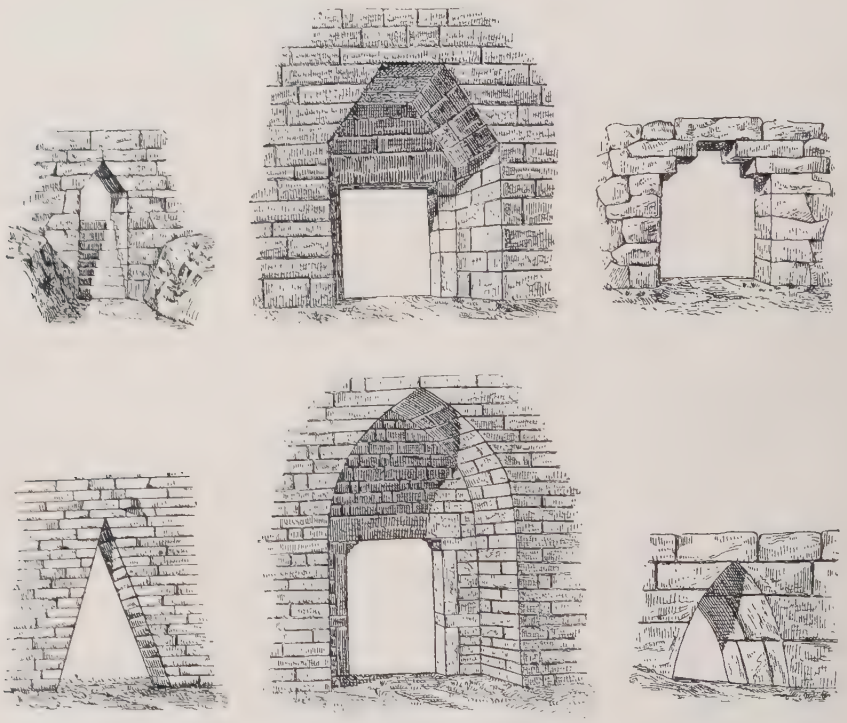
where rough filling of earth and loose stones could be superadded to any amount, so that the buildings should become really subterranean, such a structure is permanent and effective; but it is of very small utility in buildings where walls must be limited in thickness, because other open spaces, passages, or rooms, immediately adjoin the room which is roofed by the corbelled vault. Those rooms are small, how-

83—Part of ceiling slab of flat-roofed chamber of beehive tomb at Orchomenos in Bœotia. (From P. and Ch., Vol. VI.)

ever, and it was practicable to roof them with huge slabs of stone. Thus the beehive tomb at Orchomenos in Arcadia has a rectangular room about 9 by 12 feet, and this roofed with slabs carved in a pattern of strong Egyptian character (see Fig. 83). Reference to the plan of the citadel at Tiryns makes it clear that no such domical structure could be used in the residence part of the fortress-palace; but it has already been shown that the chambers in the wall are built on this system.

In close connection with this piece of construction are the doorways which exist in the outer walls of many towns and citadels. Those

shown on a small scale in Fig. 84 illustrate this principle of corbelling, each stone projecting beyond its neighbour. One example shows the projecting ends of the corbels left square, thus declaring the structural system adopted. In all the others there is, as it were, a pretence at smooth curvilinear vaulting, or of that approach to it which consists



84—Corbelled construction: at Elaios, Assos, Thorikon, Messene and Phigaleia. (From P. and Ch., Vol. VII.)

in a straight sloping jamb or face wall (see Fig. 85). The natural way of filling, by an ornamental tympanum of some kind, this triangular head of the corbelled opening, is seen in the famous Gate of the Lions (Fig. 86), where a bas-relief displays the strongly Asiatic decoration of two lions, reared up and facing a sacred pillar of some kind. The disposition to cut away the ends of the stones and to smooth them off to a continuous curve is so marked that we are led to imagine a previously existing system of real vaulting by means of wedge-shaped solids known to these builders by hearsay or by observation, but which they felt to be beyond their strength to imitate. We have no knowledge of such a system having existed, except in those brick

vaults of drains and underground passages in Egypt, mentioned in Book I. It is possible, however, that the Etruscan vaulting, which is of indefinite antiquity, may be the remains of a still more ancient system known to the people of the East (see Book V).

Fig. 87 gives three doorways of walls in situations similar to those shown in Fig. 84, but of these two are of a structure exactly like that shown in certain Egyptian monuments (see Book I, Figs. 10 and 11). The construction in *A* and *B* is no more a piece of vaulting, or of

85—Doorway of tomb, formerly called "Treasury of Atreus," at Mycenæ (compare Fig. 82). (From photo.)

arch construction, than the instances given in Fig. 84, but it approaches still more nearly in appearance to a vault. It is a wholly unexplained fact, this craving of the earlier builders for a hollow curved roof over their heads. The larger gateway, *A*, in Fig. 87, is an instance of the worst possible building. Those long, slender points of the two cor-

bels which carry the lintel-stone above are in most imminent danger of breaking unless, indeed, the weight is taken off those projecting points by some artifice of the stone-cutter in dressing away the beds where they meet. In either case it is bad building and bad designing, and so contrary to the straightforward methods of the early builders in hewn stone that we are driven to suppose a previous system of real

A *B* *C*

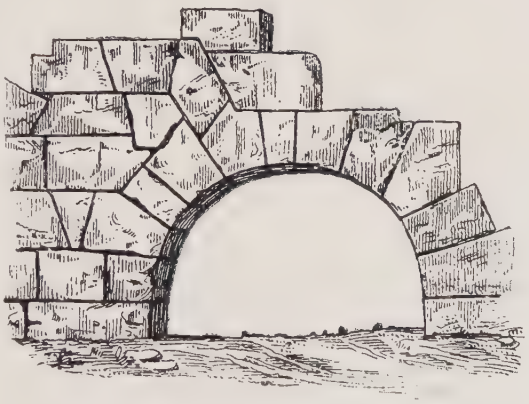
87—Primitive doorways: A, in the Peloponnesus; B, at Œniadæ in Arcanania; C, at Alea in Arcadia. (From P. and Ch., Vol. VII.)

vaulting, of which this is a feeble copy. On the other hand, *C*, Fig. 87, is a piece of real arch construction, for it is always an arch when the stones are so cut and set as to transmit a vertical pressure sidewise —that is to say, to turn the vertical load resting upon the arch into two horizontal or diagonal pressures acting outwards on either side. This doorway, *C*, is as truly arcuated a form as if it were a semicircular arch made up of a dozen voussoirs.

The true arch was known, however, to the Grecians of early times. Fig. 88 gives one example of an epoch not determined, but estimated at 900 B.C. The fact of there being such a piece of arch construction in Greece at so early a time is even less striking than the indifference shown to the back of the arch, to that which we call the extrados. To see this arch with the intrados cut to a nearly perfect semicircle while the backs of the voussoirs are left to tail in to the masonry above, is like finding a piece of seventeenth-century Italian building out of place. Usually the early arch builders were careful to cut their voussoirs to uniform length so that each part of the ring resembles every other part.

86—Gateway of the citadel, Mycenæ: called Gate of the Lions. (From photo.)

Arch construction was not destined, however, to be carried far by the Greeks of the historic epoch. The reason commonly given for this is the abundance of good material which the stone quarries and the marble quarries of Greece were ready to furnish. These quarries, too, were close at hand. The stone, once extracted from the quarry, did not need to be floated for two hundred miles by water on a raft or scow, built for the purpose, but could be dragged without much labor, because generally down-hill, to the site of the building. It has even been set up as a plausible theory for the habitual use of a round, that is, nearly cylindrical form, for the shafts of columns, that in this way the separate pieces, the drums, could be rolled down-hill, and even up-hill if necessary, to the site of the building; and although this theory has been pretty much abandoned since the discovery of the lugs which are reserved and which project from the round surface of the drum, these blocks, prepared for use as parts of columns, have been found in many parts of Greece, and the presence of the lugs suggests the practice of attaching ropes to them, not merely for hoisting into their final position in the building, but also for attachment to sledges or other means of easy transport. The Greeks began with a softer stone and used marble only as its great superiority became more important than the superior ease of working. In the Greek colonies it was seldom used for the structure of a building, for in southern Italy and in Sicily tufa, that is, a volcanic sandstone, or some easily worked limestone could generally be secured; and in Asia Minor limestone of many varieties; while marble of hard and uniform texture was difficult to procure, even had the builders been willing to undertake the handling of it.



88—Arch of early Greek time. (From P. and Ch.)

CHAPTER II

THE EARLIER TEMPLE BUILDINGS

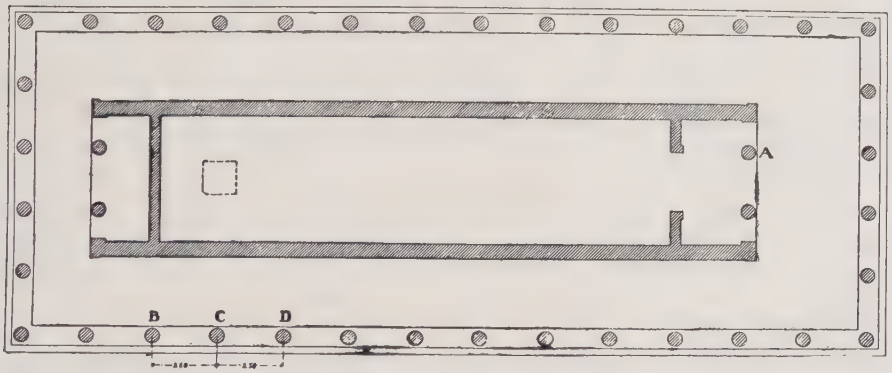
BRICKS were but little used in the Greek buildings, as we find them, but the fact of their use in such buildings as the portico at Epidauros and the recorded rebuilding of a temple at Megara by the Emperor Hadrian about 120 A.D., and which had been of brick until about that time—the certainty of such buildings in brick, both crude and fired, is not to be overlooked. It is quite certain from the discoveries at Olympia,[6] at the Argive Heræum or Heraion: that is, temple or sacred place of the goddess Hera, that the pillars, posts, columns, pilasters, upright members of all sorts were very commonly made of wood, and it is equally certain that the roof structure in all its parts was of wood also. Even in the historical time the roofs of the famous temples of Greece, the rafters and purlins, that is to say, the members which directly carry the roof-covering of tiles or the like, were of wood; but in the ancient buildings horizontal courses which rested directly upon the pillars were also wood. In short, we must conceive of the early temple of Hera in Argos[7] as being a building of timber with a chamber of brick built beneath its roof and within its outer posts. If, for instance, we take the plan of the most ancient temple of the Heraion (Fig. 89) we are to assume that all those round pillars of the outer colonnade are of timber, and that the walls of the enclosed chamber within are brick. Then as for the four columns which form the two porticos distyle in antis,[8] they may have been of more precious

[6] The generally fine preservation of the statue of Hermes carrying the infant Bacchus, found at Olympia by the German explorers, is ascribed to the embedding of the marble in a mass of clay, the broken-up crude bricks of the neighbouring walls.

[7] Uncovered and explored by the American School of Classical Studies at Athens, 1892-94.

[8] Distyle in antis: Distyle, consisting of two columns. In antis, between or within the antæ.

material even at a very early time. If understood in this way as a structure not exactly a piece of framing [9] but rather composed of heavy timber, superimposed horizontal pieces resting on the tops of vertical pieces, except as to the roof, where a more elaborate putting together of small pieces may be inferred, we are more ready to understand the wide spaces between the columns, about 11 feet 6 between centres, and the relative smallness of the columns themselves. It would be very strange wooden building to use the heaviest possible scantling and still to bring the uprights near together when the superstructure itself was also of wood. There is a tradition that these wooden columns of the temple of Hera at Olympia were replaced by stone



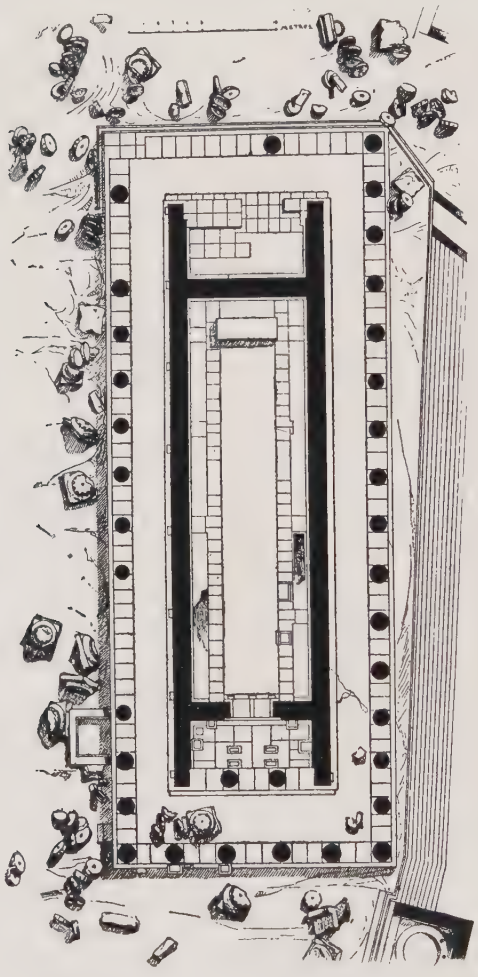
89—Plan of ancient temple of Hera at Argos. (From Waldstein, Vol. I.)

columns, one by one, as they were found to be partly decayed; and this because that temple was preserved and kept in good order even into historic times. But the old temple in the Argive Heraion enclosure was abandoned early in the fifth century when the new and much larger temple was built in the approved style of the time. Whether the old building was allowed to decay or was kept in a tolerable condition of repair until the close of classical times does not appear.

The custom of painting the exteriors of temples may be thought to have originated in the decoration of the wooden buildings of early times. This is not because wood alone requires painting, for the stone-cut monuments of early Egypt were painted with great richness, and

[9] Framing: Used in this book in the sense of woodwork put together by combining heavy sticks (sills, uprights, girders, joists, plates, and the like) either by means of mortise and tenon or by halving, or the like, as a frame house is built in any American country town. There is no framing when floor beams are set upon a girder, merely resting upon it.

no ancient architecture excludes the use of colour. The only connection between the custom of painting the stone temples of the sixth century or the marble temples of the fifth century and the archaic buildings will be found in the special application of colour to certain parts of the work. This subject is treated below in connection with the Theseion and the traditions of wooden building retained in the perfected Doric style.

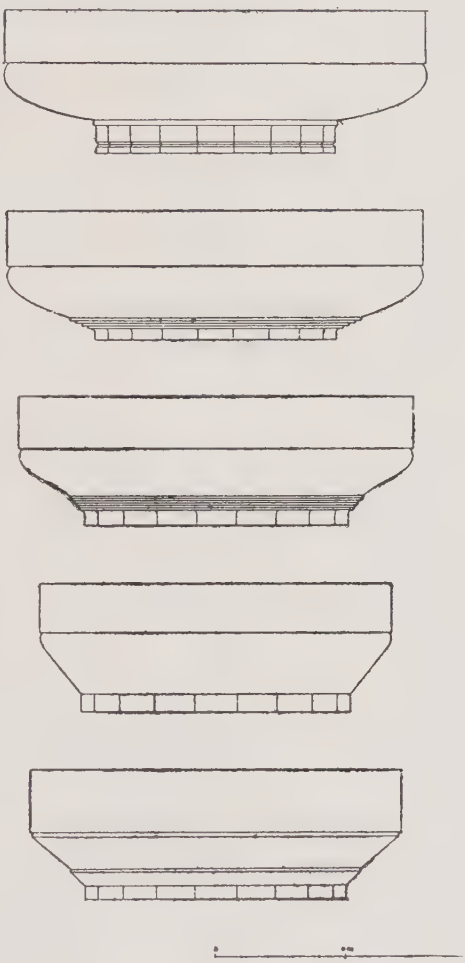


90—Plan of ancient temple of Hera at Olympia. (From Laloux.)

The temple of Hera at Olympia referred to above is very similar in form to the old temple in the Argive Heraion. Comparison of the plan, Fig. 90, with the plan, Fig. 89, and the comparison of both with a normal temple of the fifth century (Figs. 116, 117, 120) will show how great was the later change in the general conception of a sacred building of the first class. A long and narrow naos,[10] and with the columns of the outer portico more than twice as numerous on the flanks as on the front, was perhaps the rule in the early centuries for peripteral temples, which, however, were necessarily rare. The reader should notice that throughout this chapter the columns of the flank

[10] Naos: Same as cella, the Greek term in common use for buildings of Grecian origin. There is always an uncertainty as to the extent of its application; sometimes "naos" or "cella" means the whole enclosed building of the temple, and sometimes it means only the principal compartment, excluding pronaos, epinaos, opisthodomos, or adyton, whenever one of those chambers exists in separate form. The word sekos, having originally the same meaning, is used for the enclosed part of a round temple, a small shrine, or otherwise for an exceptional structure.

are counted complete, including the two corner columns, and those of the ends or the fronts in precisely the same way; that is to say, the corner columns are counted twice in every instance. We speak of the Parthenon as an octostyle temple with seventeen columns on the flank, although in doing so we count the corner columns as among the eight and then among the seventeen. Concerning this temple at Olympia,[11] as its columns seem to have been of stone, it is stated positively by Pausanias, in his study of the historical sights of Greece, that one of the columns was then of oak (Pausanias v, 16), but this column was not in the external colonnades. Of the stone columns the one that seems the most ancient has only sixteen channels,[12] the others have twenty channels (compare what is said of the Parthenon columns, p. 171). On the other hand, the opinion of the first explorers and of the very able architect who undertook the theoretical restoration of the buildings at Olympia, Mr. Victor Laloux, is that these stone columns were put into place successively during a long course of years. The forms of the capitals vary very greatly. Fig. 91 gives five forms of the same general scheme — the well-known design of the Doric capital, all found in the Heraion of Olympia, and it would be perhaps impossible to find more diverse



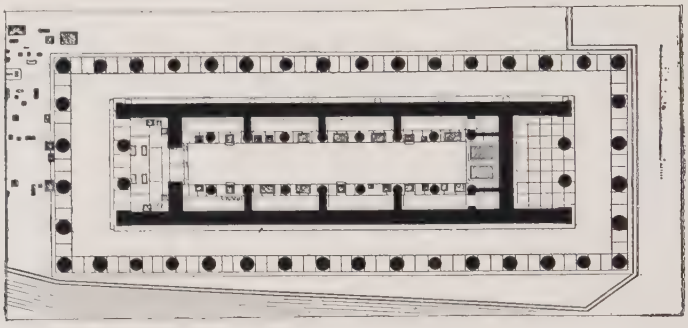
91—Capitals of ancient Temple of Hera at Olympia. (From Laloux.)

[11] Uncovered and explored by a Prussian royal commission in the last quarter of the nineteenth century.

[12] Channel: A broad and shallow groove, of which from sixteen to twenty-four were cut in the shaft of the Doric column (see below, description of the perfected Doric style).

profiles of the echinus,[13] or treatment of the little cannelures at the base of the echinus, even if a number of different buildings were compared instead of the columns of this one (see the diagram of the perfect Doric order, Fig. 123).

There were found among the ruins of this building parts of columns and of curious wing walls projecting inward and dividing the naos into four principal apartments. The plan, as restored by Mr. Laloux, is given in Fig. 92 and there is no doubt of its accuracy in

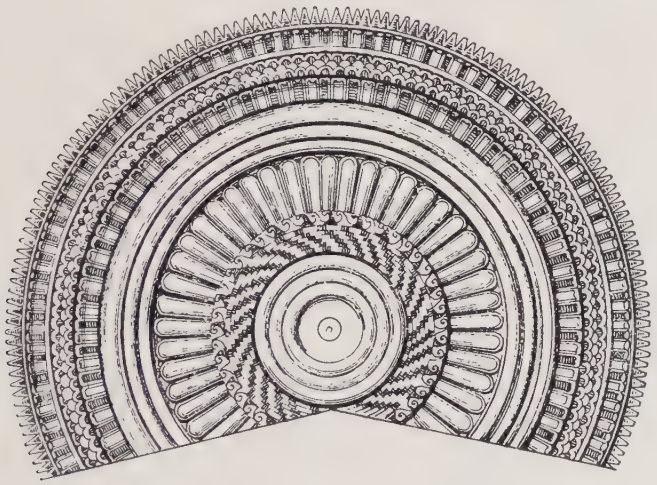


92—Restored plan of Temple of Hera, Olympia. The Hermes of Praxiteles was found among the ruins: the pedestal still stands as indicated. (From Laloux.)

all important parts. The chamber of the naos, then, was divided into a central nave and four chapels or niches on each side. This was probably a structural device, for although the width of the naos was not great it belongs to a time when builders were very cautious, and moreover the plan may not have been left unchanged from an early structure of inferior material, perhaps even of crude brick. The result is that the open nave is only fourteen feet wide, the entire width of the naos between its outer walls being about 25 feet. These niches or chapels are not perfectly understood because no remains of the architrave or other superstructure exist for this innermost order; but it is known that the whole interior of the naos was covered with a flat ceiling, and that there was a considerable space between that ceiling and the sloping roof above. Pausanias (v, 20) tells a story of a dead body being found in this place. It was that of a foot soldier who must have been engaged in the defence of the sacred precinct against the Lacedemonians. It appears also, from Pausanias's elaborate and minute account, that the temple was, even as late as the second century A.D., filled with treasures of almost unexampled rarity and

[13] Echinus: See below, ch. IV.

antiquity. The famous chest of Cypselus (Kypselos) was there, and it is from Pausanias's narrative that the many archæologists who have concerned themselves with the sculptures of that chest have drawn their information. All this goes to prove that the temple remained in perfect condition until abandoned in consequence of the supremacy of Christianity, and this will account for the many changes in its structure. The temple would seem to have been very richly adorned with painted terra cotta, for there are numerous remains of a tiled roof, and an extraordinary acroterium[14] still exists, a circle of about 7 feet diameter and having a blunt triangle cut out of it so that it



93—Terra-cotta acroterium from the roof of the Temple of Hera at Olympia. (From Laloux.)

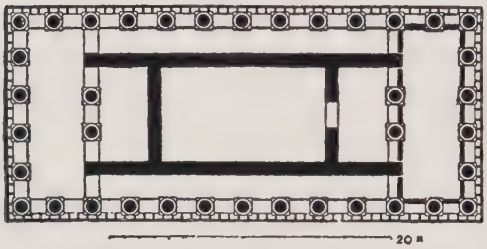
could sit squarely on the slopes of the roof (see Fig. 93). It is painted in several brilliant colours.

That temple must be taken for our present purpose as of the eighth century B.C.; so early does it appear that the Doric order had taken its initiative.

The buildings named above, even the two temples of Hera at Argos and at Olympia, are entirely in ruins; earthquake and the violence of men have left nothing but the stylobate upon which the former places of the columns are yet easy to fix; and, here and there, a standing stump of a column, together with very numerous fragments

[14] Acroterium: In classical building a pedestal erected upon the edge of the roof above the pediment, one at each of the corners, and one upon the apex. The term is applied constantly to the ornament itself, of whatever nature, put up in such a position—a fan-shaped piece of painted terra cotta, or a life-size group in marble.

of detail from all parts of the structure. It is the business of archæologists devoting themselves to architecture to restore in theory the building as it used to be, and the work of such experts is altogether respectable, and is instructive so long as it is not taken too absolutely, as being final. No theoretical restoration can be trusted absolutely, for another student visiting the ruins may see, in a hitherto unnoted fragment, evidence for a change in that restoration; or a fragment hitherto undiscovered may be brought to light and may change the whole aspect of the structure.



94—Plan of temple at Assos. (From Assos Report.)

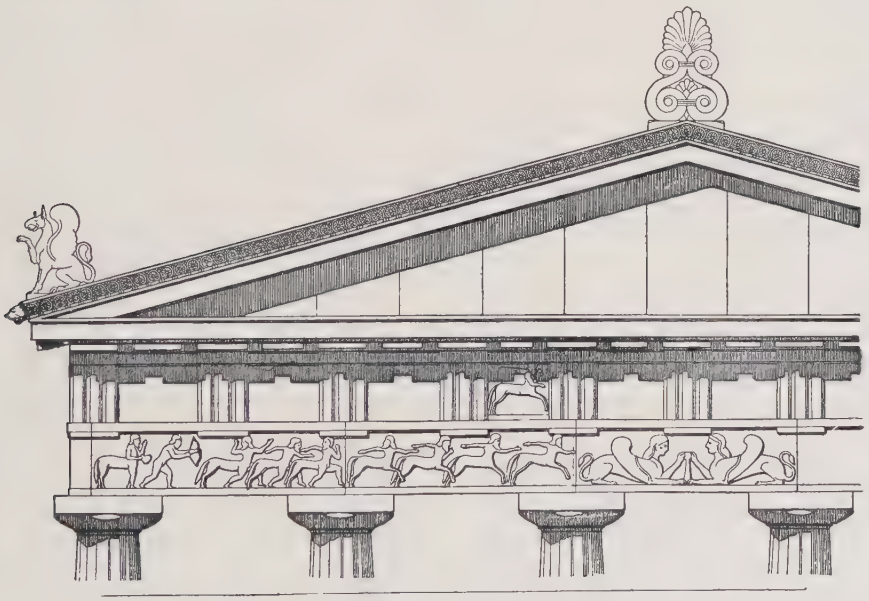
To these buildings should be added the temple at Assos which was very carefully cleared of soil and studied by the Archæological Institute of America in the years 1882–83. The temple was found without possibility of mistake to have been hexastyle, with thirteen columns on the flank and with this peculiarity, for a peripteral building, that there was only one entrance to the naos—namely, at the east end (see Fig. 94). There a pronaos, distyle in antis, is found, with an ample space between the columns and antæ of the cella and the outer colonnade. A theoretical restoration of great interest was made, which can be trusted as far as any modern study of antiquity, and the result is a design which is not very archaic in the forms of the shaft and capital, except as to the absence of entasis, and with a frieze nearly normal but very low or narrow; also with triglyphs of ordinary size, the metopes[15] are long and narrow (see Fig. 95). Some few of the metopes have been found with sculptures upon them; but more have been found plain. The striking thing about the temple is the sculptured epistyle, for on the eastern front there are carved a pair of sphinxes[16] and adjoining these a curious procession of centaurs of both types, viz., the more familiar because more recent form, where

[15] Metope: The space between two triglyphs of the Doric frieze (see below, ch. IV).

[16] These are said by the writer of the Institute Report to have occupied the middle of the frieze, which, indeed, their symmetrical position would suggest, and to represent or to constitute the "coat of arms" of Assos; and although this latter expression is erroneous, it is altogether probable that a pair of sphinxes arranged in this way was identified with the town.

the creature has four equine legs, and the earlier form, where a man's body, complete or nearly so, has the trunk and hind legs of a horse appended. Another procession of centaurs is on the epistyle on the south side, these all of the more recent type, galloping one after the other and each with a huge club on his shoulder. On the north side the epistyle gives sculptures of hunting and of savage creatures—the lions of Asia Minor—tearing down deer or bulls, and one series is devoted to the labours of Hercules. Large parts of this epistyle are lost entirely, but on the inner entablature, that above the portico of the pronaos, bulls in couples, head to head and horns interlocked, are carved in very low relief.

Of very early buildings which, though clearly Doric, are also admittedly of an archaic style, there must be named two admirable

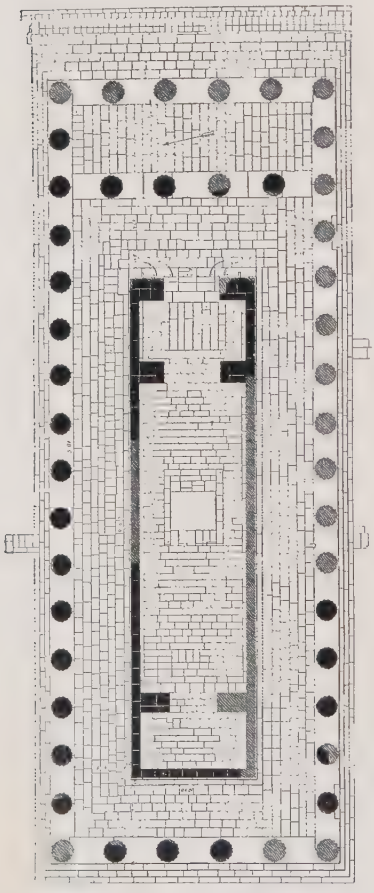


95—Southern half of eastern façade of Temple of Assos. (From Assos Report.)

temples, forming part of the most important group of such structures of which we have any knowledge, lying in ruins at Selinunte, on the southern coast of Sicily. These buildings are known to have belonged to the ancient Greek city of Selinus, whose history is mingled with that of the Carthaginian struggle with Grecian colonists and with Rome. These two temples are indicated by Hittorff [17] as D and C;

[17] Architecture antique de la Sicile, by Jacques-Ignace Hittorff. Paris, 1826–1830.

D being the earlier structure. Each of them is a hexastyle building, but while the older one has thirteen columns on the side, the other has no less than seventeen columns, and in this way approaches very nearly to the proportions of the two temples of Hera which have been named above. Fig. 96 is a plan of this temple C, and there will be noticed the curious absence of a portico in antis and of any pronaos whatever of architectural character. The eastern end of the naos was cut off to form a simple vestibule with doorways not very wide.



96—Plan of Temple C, at Selinunte in Sicily. (From K. and P.)

There is still another temple of early style at Selinunte, though this one is outside of the city on the east—one of three which stand on a bold hill separated from the city by a rather deep valley, some part of which was once occupied by the harbour now filled up. This temple has a naos even longer in proportion to its width than that of the Argive Heraion. It is divided into two inner chambers and two porches at the east and west ends, and its length is almost four times its width. Fig. 97 gives the plan of this temple, which was indicated by the letter R in Hittorff's list—now more generally called Temple E. Some of the metopes of this, very elaborately sculptured, were found among the ruins, and these are preserved in the museum at Palermo. Fig. 98 gives one of these metopes, known as Hera and Zeus, and Fig. 99 gives the one supposed to represent Athena combating Ares, or a giant. These are among the earliest Greek sculptures of strictly architectural association which are known to us. It can hardly be doubted that they are later than the general structure of the temple.

The plans of the temples shown in Figs. 96 and 97 are noticeable in this, that the space occupied by the enclosure, to whatever purpose its chambers are applied, is very small, while the space occupied by

the colonnade is vastly greater. Thus in Fig. 96 Temple C at Selinunte, the naos occupies exactly two-sevenths of the total dimensions of the stereobate. Two-sevenths of the roofed space is all that is allowed for the shrine, the treasury, the image of the divinity, and the votive offerings, together with such small altar or altars as may have been within the walls; five-sevenths are given up to an absolutely open portico, which indeed might be fenced off by temporary or permanent screens, but could never be other than a place of resort and of meeting. This strangely great proportion is more marked in the earlier temples than in those of the central time. Thus, in the Theseion, of which there is discussion below, the proportions are one to three, and in the Parthenon the enclosed space is very nearly as large as the space occupied by the porticos, that is to say, the naos occupies very nearly half the total stereobate. This can only mean a growing demand for space within the walls, and that the later temple became more and more a church and less and less a simple monument to the divine patron of the town.

97—Plan of Temple E at Selinunte. (From K. and P.)

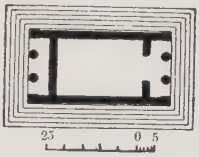
The temple of Assos, and the temples at Selinunte, D, C, and E, mentioned above, are peripteral;[18] and this form of temple we identify at once with the most sumptuous and costly of the Grecian build-

[18] Peripteral: Having the naos (including in that name all the different chambers within the wall, no matter what their purpose may have been) enclosed in a continuous peristyle. Peristyle: A continuous sequence of columns with their entablature, and the roof which may rest upon them, whether this portico and colonnade encloses the naos of a temple and therefore faces outward, or fronts upon the four sides of a court or public square, in which case it faces inward. The term involves the meaning of completely surrounding something, and a colonnade running along one side (for instance) or even two sides of a square would not be called a peristyle.

98—Metope of Selinus Temple; Hera and Zeus, now in Palermo Museum. (From photo.)

99—Metope from Selinus Temple E, Athena and Enceladus, or Ares; now in Palermo Museum. (From photo.)

ings. Some are very small; but in every case they seem to be the most splendid structures which the community could produce. On the other hand, temples of much less pretension existed by scores in Grecian towns, in lonely mountain valleys, in enclosed places made sacred by special dedication to this or that divinity; and these temples have one or two porticos and no more. These porticos even may be very small. Thus Fig. 100 shows the plan of the little temple at Eleusis, near Athens, which we call the temple of Artemis. Its naos wall is not screened by columns, but stands exposed like the wall of a dwelling-house, and at either end there is a portico, distyle in antis. As the plan is given here, there is but one chamber and but one entrance, and the porch at the western end seems to have no other purpose than that of decoration; but there may have been a treasure chamber or the like at this end. A still simpler form of temple is one with but a single portico in antis, and the western end of the naos as plain as the flanks. Such a building, 18 or 20 feet wide and half as long again without counting the steps around it, is often the shrine of some minor divinity in a sacred enclosure dedicated to a greater god. Thousands of such temples existed in Greece, in the islands, and in the Grecian colonies on the shores of the Mediterranean. They must have been relatively as numerous as churches in Rome or in Venice in the Middle Ages. One of these, the little temple of Themis at Rhamnus, retains polygonal masonry of a very early type in the walls of the naos. It is probable that similar traces of very archaic work are to be found everywhere in the construction of these minor devotional buildings. The larger and more costly temples date from a later time; there were apparently very few in the sixth century B.C., and they were almost unknown before that time, and even in the fifth century it was not until rivalry between the different city-states had been greatly encouraged that any one of these small communities undertook the serious task of building a peripteral temple.



100—Plan of Temple of Artemis at Eleusis. (From Eu. A.)

CHAPTER III

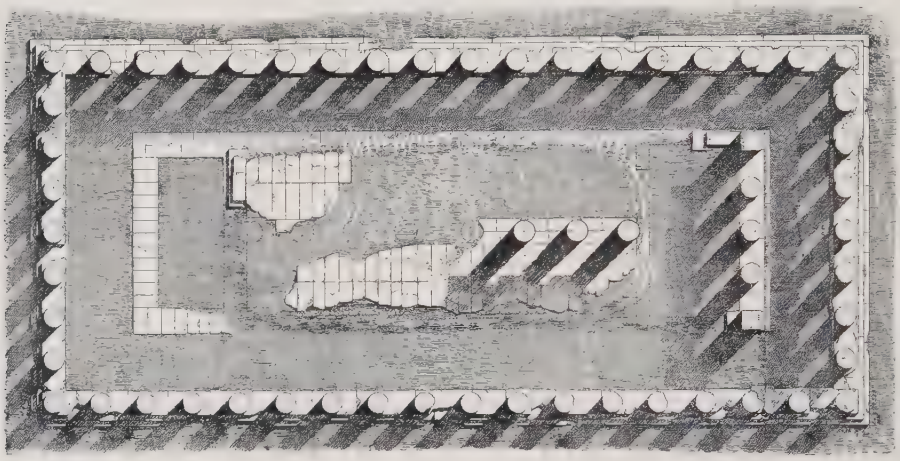
THE EARLIER DORIC TEMPLES

ON the shores of the Gulf of Tarentum in the far south of Italy are the ruins of the ancient Greek city of Metapontion, called by the Romans Metapontum. There remain only fifteen columns of what was once a noble ancient temple, but those columns are so celebrated that the temple claims especial mention. Fig. 101 gives these columns as they stood about 1885. They are of a fine early type, archaic in the broad spread of the capital and in the deep gorge which separates the echinus from the shaft, and in the very considerable taper of the shaft. The entasis is very great for so early a structure. There are twenty channels. From the remains of the stereobate it appears that there were six columns on the front and twelve on each flank, the corner columns being counted twice, as usual. At Pesto, on the west coast of Italy and south of Naples, are the ruins of the ancient Greek city of Poseidonia, called by the Romans Pæstum, and here is a very well-preserved temple, though of early date, known popularly as Tempio di Cerere, the temple of Ceres. Fig. 102 is its southwestern front. The curious thing about the building is that it should be of such normal type as to its general proportions while yet marked by its details as of undoubted early date—perhaps even earlier than the beginning of the sixth century B.C. There are six columns on the front and thirteen on the side, and the shafts of these, with their moderate diminution, their slight and refined entasis and their twenty-four channels, would seem to fix a date of about 480 B.C. for the temple; the broad spread of the echinus and the abacus alone suggesting an earlier date. The features which have caused the unanimous opinion of archæologists as to its greater antiquity are especially the great breadth or height of the entablature (two-fifths of the total height of the column) and the rather steep pitch of the roof as indicated by the pediments.

101—Ruins of temple near R.R. station Metaponto, in South Italy. (From photo.)

102—Smaller hexastyle temple at Pesto, called Tempio di Cerere. View from southwest. (From photo.)

Also at Pesto is that extraordinary building which has been called for many years "the Basilica," on the supposition that so unusual a plan must be the plan of a civic building, a portico of resort for business and for conversation rather than a temple. This is an enneastyle,[19] and is the only one known. Moreover, as befits a building



103—Plan of the enneastyle temple ("Basilica"), at Pesto in Campania. (From K. and P.)

with an uneven number of columns at each end, this building was divided by a row of columns straight through the middle. This is so striking a feature that some writers have assumed a double naos or two separate chambers, one on either side of this row of columns. There is no sufficient reason for this supposition, and the more recent researches (such as those of Koldewey and Puchstein)[20] point to a single naos divided through the middle by this colonnade, instead of having the double colonnade with its consequent triple arrangement of nave and aisles, as seen in the temple of Poseidon at Pesto and the Parthenon at Athens. Fig. 103 gives the plan made by these recent explorers.

Fig. 104 shows this building from within, looking inland, that is, nearly eastward, and we have in the photograph, first, the four standing columns of the middle row; next, at right angles with this row, the group of three which form the portico in antis, and the two antæ themselves and beyond that again, the nine columns of the eastern

[19] Enneastyl : (adj.) consisting of nine columns as a portico; having nine columns in front as a temple or the like: (subs.) a building distinguished in this way.

[20] Die Griechischen Tempel in Unteritalien und Sicilien, by Robert Koldewey & Otto Puchstein. Berlin, 1899.

front with six or seven in return on either flank. In the grass, where the earth is piled high over fragments of the building, are seen two of the capitals thrown down and resting on their tops. The steps seen in the foreground indicate the relief of the pavement of the naos above that of the pteroma. Fig. 105 shows the effect of the colonnade visible to one who should stand in the eastern portico and look northward. On his left is the porch tristyle in antis—of the naos, or else of the pronaos serving as vestibule. Farther on the left are the three columns still left standing from the strange lengthwise colonnade. On the right are the columns of the eastern front in such steep perspective that they can hardly be counted; two columns of the northern portico are directly opposite, and beyond these, about 65 feet away, is the southern flank of the large temple supposed to be that of Poseidon, or Neptune. This temple is noted for the great spread of its

104—The Enneastyle at Pesto. Interior looking eastward. (From photo.)

capitals and by the strongly marked necking which separates them from the shafts, as of a period not later than the beginning of the fifth century B.C. If the unique character of its plan would seem to call for an earlier date, this may be partly explained by the situation of the temple in a colony not certain to be influenced by

the same spirit which was controlling the slow development of the style in Greece proper. There are other exceptions, though none so marked as this—and these exceptions are generally among buildings of an earlier period. What is attractive in the temple is the great beauty of the shafts with their marked entasis and the re-

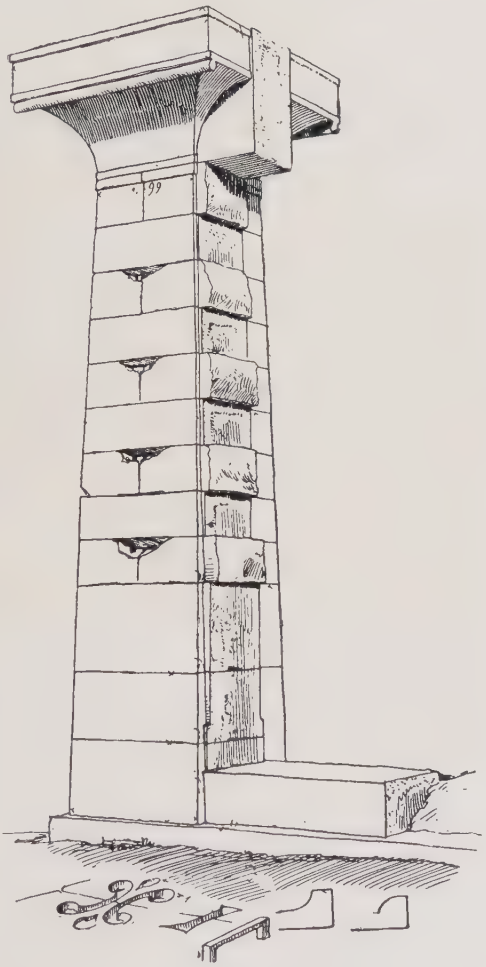
105—The enneastyle at Pesto. Interior, looking northward. The large temple (Figs. 107 and 116) seen beyond. (From photo.)

markable necking which separates the capital from the shaft—a necking made up of a round convex moulding combined with a curious cove which seems to be ornamented with leaves growing out of the channels themselves. The leaves are very slightly indicated, but all observers have agreed as to their being sculptured with regard to their natural form. Their shattered condition prevents this being clearly seen in photographs even of large size.

Another curious feature, and one in which the temple is alone, is the slope and the strange hollow cove given to the antæ at the eastern entrance to the naos. Fig. 106 gives one of these drawn in perspective, but with the dimensions figured—the drawing signed with the joint cipher of the initials K. and P. This same anta is plainly seen in the photograph (Fig. 104) on the left, with a piece of the architrave

projecting from it; and the corresponding anta is less plainly seen on the right. Again, in Fig. 105 the two are seen to enclose the entrance porch of three columns.

Fig. 107 shows the exterior of the Enneastyle in question, as seen from the east, with the temple of Poseidon immediately beyond and the so-called temple of Ceres in the distance on the right. It is one of the greatest misfortunes to the study of Greek architectural art that we have not a more perfect knowledge of the design of the remarkable building which is commonly called the Basilica at Pæstum, because we are too ready to accept as true of all Greek work the succession of very similar general forms and very limited modifications even of details.



106—Anta of the enneastyle temple at Pesto. (From K. and P.)

The great altars attached to the two early temples which have been described, the hexastyle and the enneastyle at Pesto, have been uncovered and studied. They are severally 40 and 60 feet from the eastern fronts; and the larger of the two is 60 feet long. The Grecian temple was not a place of preaching, nor of gathering an audience to witness a sacrifice, real or symbolic. The building was itself a sacrifice, a spending of substance to do honour to the god; and it was also a storage place for other such offerings, and, furthermore, a monument of the community's devotion. The great altar of burnt offerings was generally set up near the temple, often directly

opposite its principal front, as at Pesto. At Olympia an altar to Zeus is described by Pausanias as 22 feet high (v, 13, Frazer's translation) and 120 feet in perimeter at its lowest level. Koldewey & Puchstein have uncovered and measured with great care the altars of several Sicilian temples; and a size of 30 × 70 feet for one of them is not unusual. We are reminded of the accounts of the sacrifice of heca-

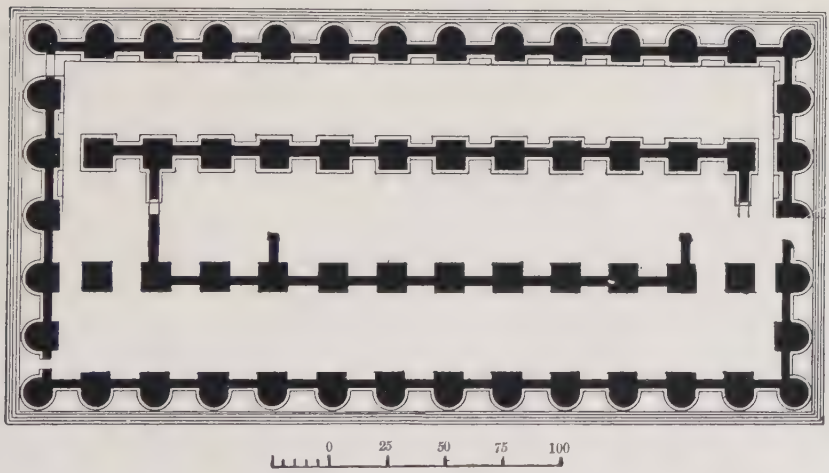
107—The Enneastyle at Pesto, with the large hexastyle temple ("Tempio di Nettuno") beyond. View from southeast. In the distance is the small temple (see Fig. 102). (From photo.)

tombs; and indeed the altar was sometimes built up, above its foundation, of the ashes and burnt bones.

Another exception to all the rules is found in the great building near Girgenti in Sicily, among the ruins of Akragas, and known commonly as the temple of the Olympian Zeus, or, more briefly, the Olympieion. It is alone among Grecian buildings known to us, in the complete denial in its structure of the essential features of its design. Fig. 108 gives its plan as restored, a plan not positively settled in all its details, but sufficient to explain its most characteristic features. What replace the free columns of a peristylar temple here are engaged columns, and these are built up of small stones. Thus, in the colossal temple of Apollo at Selinus, the octostyle known as Temple G, each of the lower drums of the shaft is about 11 feet 7 inches in diameter, and the whole shaft was made up of five or six such drums; but in the Zeus temple at Akragas the shaft, about 14 feet in diameter and 50 feet high, was built up like a tower. The very carefully thought out restoration of Messrs. Koldewey and Puchstein is given

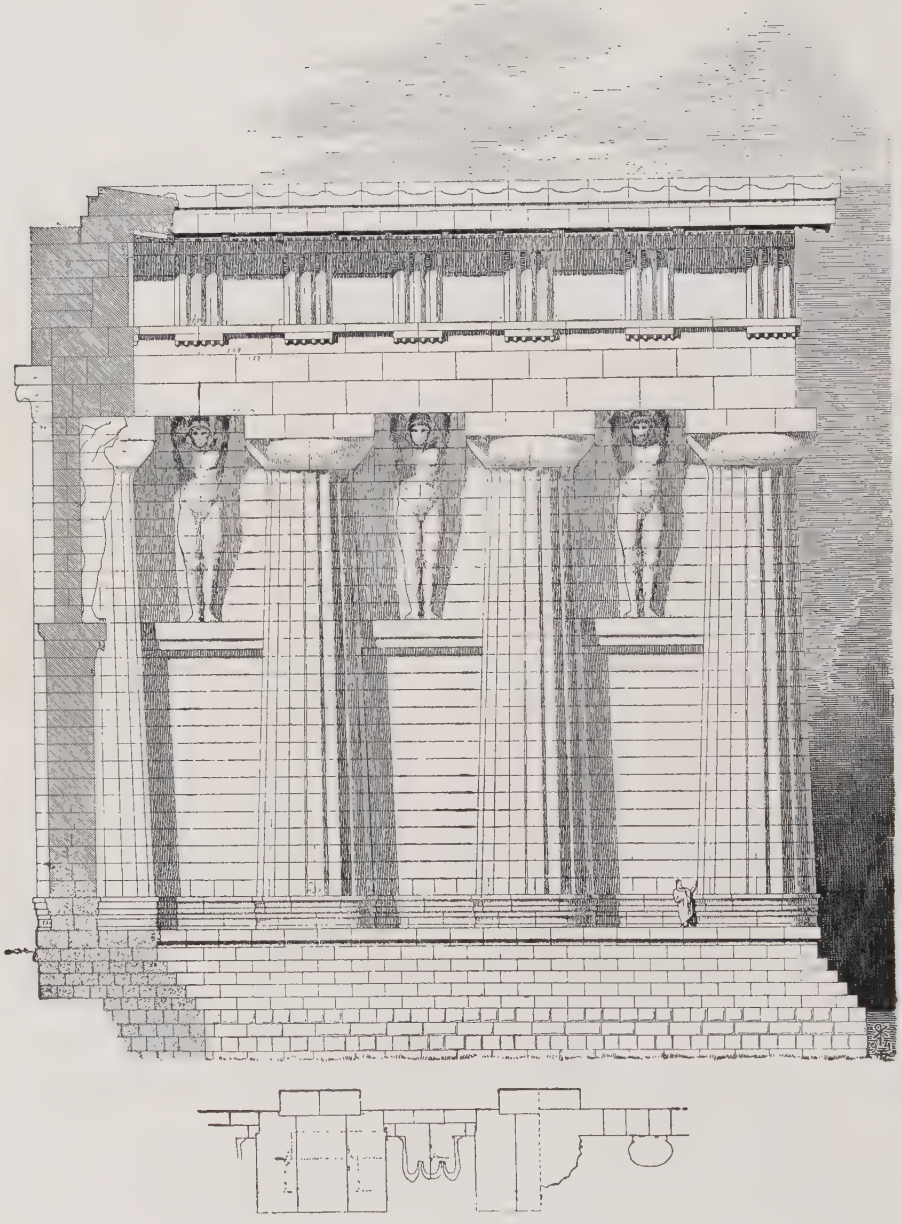
in Fig. 109, and it will be seen from this how the courses of stone are only 2 feet high, while each one of these courses, instead of being a single drum, is composed of four or five blocks in the half circle. Moreover, the column is not a complete thing in itself—it is a part of the wall, built to project exactly like a buttress pier, as found in so many Romanesque churches throughout Europe, and engaged with the wall, which wall—though not very thick—was built at one time with the column-like piers. If we were to take one pair of these engaged columns with the piece of wall between them, and count the stones in one course, we should find at least seventeen, and we should find that they are of different sizes, the joint coming in different places in the columns and in the curtain wall between –all in a perfectly legitimate way and as comports with good building of a different sort, but not columnar architecture at all.

Returning now to the plan, Fig. 108, we have to notice the attempt to enclose as large a naos as possible, and then to divide it by two rows of square piers with a thin wall between them. The building is wholly in ruins, and there are many doubtful points even in the



108—Restored plan of Temple of Olympian Zeus, at Girgenti, Sicily. (From Eu. A.)

plan; but it does appear certain that the western end was closed up as shown, while at the eastern end only was there free passage from what may be called the nave to the side aisles. The arrangement of the entrance to the temple is not understood. The division into three parallel halls, of 40 and 46 feet in width, has given rise to many curious theories as to the roof, as to the method of admitting daylight, and



109—Proposed Restoration: order of Temple of Zeus, at Akragas. (From K. and P.)

as to the architectural ordonnance. These theories are the more interesting to their authors because of the astonishing atlantes [21]

[21] Atlantes: plural of Atlas. Atlas, a male figure used as a support instead of a column, or as an apparent support instead of a pillar, an engaged column, or the like. Called also Telamon: plural Telamones. Cf. the definition of Caryatid.

which are known to have existed and which are shown in the restoration (Fig. 109). Those atlantes were built up of courses of stone exactly as the engaged columns were built up, and in this way the sculpture of modern French buildings, in the soft stone of the Paris basin, is oddly prefigured. We can only suppose that stones for these figures were roughly shaped to somewhat near the horizontal dimensions

110—Ruins of Akragas, at Girgenti; one of the atlantes, remade from scattered blocks. (From photo.)

required, that this rough structure 25 feet 9 inches high in twelve courses was then built up in its place, and that the carving of the figure was done last of all. One of these atlantes has been studied by recent investigators, its parts collected from the mass of ruins and laid in place so that the huge statue seems to be complete, lying upon its back (see Fig. 110). Now, the placing of these statues in the building, reconstructed in imagination, is not at all a matter of certainty. Some writers, having no particular authority for it, except that the parts of one of these statues were found lying upon the stereobate, have assumed that the figures were within the building

and fronting inward from both sides of the nave. They were assumed, then, to have stood high on the wall and seen against the sky (on some supposition of an open or hypæthral naos) or else close beneath a flat roof or ceiling.[22] As each figure has its arms raised until the elbows come a little higher than the head, and the forearms extended horizontally back with the fingers clutching something (perhaps a slot in the wall), so it was assumed that these forearms carried a piece of entablature, and that the statue and the projecting entablature together formed a ressaut. But the far more instructed and therefore more careful authors of the book from which is taken the restoration (Fig. 109) have found excellent reason to believe that these atlantes were built into the outer wall, in that they found parts of one of them with the piece of flat wall to which it was attached, fallen forward and outward in such a way as to lead almost inevitably to the supposition here made. In spite of the enormous spread of the capitals, nearly 16 feet across the abacus, the space between which needed to be spanned by the lintel, if there were no other means of support, was still 11 feet 4 inches or thereabouts, and this was too great for the dimensions of the stones which the architect of the Akragas temple was putting to use. For some reason we do not understand, he controlled no large blocks of stone. None large enough for epistyle blocks of the needed dimensions are found among the ruins. So it is that the authors of this restoration assume for the architrave a piece of wall having three courses in its height, and a vertical joint coming exactly in the middle between the two capitals. They then support that architrave at the place of the intermediary joint by means of one of these atlantes. The section at the left hand of the picture (Fig. 109) shows the projection of each atlas, and shows, too, that the architrave is assumed to be three stones thick as well as three stones high—that there is therefore a longitudinal joint on the under side, and that the need of the atlantes is perfectly clear and their work as supporting members essential.

We are compelled to class such anomalous buildings as the Basilica at Pesto and the Olympieion at Akragas as belonging to an inferior, because archaic, style. The tendency in Grecian art, even more markedly than in other styles, was toward a severe uniformity

[22] This is the restoration proposed by C. R. Cockerell, in Antiquities of Athens and Other Places, etc., 1833, a volume forming a supplement to Stuart and Revett. It is accepted as certain by some later writers.

in plan and general conception. And again, the buildings of which the columns and entablatures have certain peculiarities have to be so classed, and these peculiarities are as follows: considerable taper of the columns, which is general; great height or width of the entablature, which is also a general feature; absence of entasis, as at Assos; unusually great entasis, as in the Basilica at Pesto. Judged in this way there are some temples which have only three or four columns standing which must also be classed as of early work.

Such a ruin is the temple among the ruins of Corinth, and near

111—The Doric temple at Corinth, from the north. (From photo.

the modern town of the same name (Korinthos) of which only seven columns stand, with the epistyle stones resting upon them. The plan has been recovered and shows that long and narrow form which we have found characteristic of other early buildings. It was a hexastyle temple with fifteen columns on each flank. Fig. 111 shows, from the north, the group of columns still standing; they differ widely from those of Pesto, which are of the same date, to all appearance; though the spread of the capital is as great as in the Italian example and the curve of the echinus as pronounced, there is a complete absence of the deep gorge with its carved leafage—that attempted separation of the capital from the shaft which was dear to the early Italian designers. The shaft also is nearly devoid of diminution and of entasis, for it has so little of either as almost to seem cylindrical, except for the variety introduced by the channels. These channels are twenty in number. The most unusual feature in this structure is

the use of monolithic shafts, for there is hardly another example known in Greek work of this kind of building energy, so common in the East and in Egypt. It does not, however, imply great antiquity or an archaic style in building, but rather the reverse—the introduc-

112—Temple among the ruins of Segesta, or Egesta, Sicily. View of stylobate and steps of podium. (From photo.)

tion in a very wealthy community of that kind of energy which is willing to spend itself upon monumental building.

The temple of Nemesis, among the ruins of the ancient Rhamnus (Ῥαμνους) near Marathon, in northern Greece, is found to be a peripteral temple, hexastyle, with twelve columns on either side. Five columns only stand, and fragments of three more, but as the building was never completed its date is difficult to figure by any of those refinements of detail which we are accustomed to study.

At Segesta, on the north coast of Sicily, is another unfinished temple, hexastyle, and with fourteen columns on each side. It is accepted as of the best period, because of the very delicate tapering and the slightly indicated entasis. As all its columns are erect and carry their load of entablature with the walls of the pediment still in place, it is

one of the most perfectly preserved of the buildings left for our instruction; but what makes it peculiarly valuable is the fact that the work upon it was only half done. There was still to be completed all the channelling of the shafts, and the cutting of the mouldings which would form the necking at the top of the shafts. The stones of the stylobate still have projecting from their vertical faces the very large lugs, or projecting handles, left by the workmen when the stone was shaped in the quarry, the purpose of these being evidently to facilitate transportation. Fig. 112 shows the three steps of the substructure, this photograph being one of those taken by the Brooklyn Institute of Arts and Sciences, under the direction of Professor Goodyear, in order to show the curve of the steps—a convex upward curve, intended evidently to counteract that tendency of a long horizontal line to seem as if hollow in the middle. It is not to be supposed

113—Temple of Egesta, Sicily; general view from the east. (From photo.)

that any actual settlement in the middle was thought possible, for the structure of the building is most perfect and massive, and it is easy, after all, to build a secure foundation for so utterly simple a structure. This vertical curve is to be compared with the horizontal curve noted

in the court at Medinet-Habou in Egypt (see Book I, Fig. 30). In Greek work we shall find other such curves, even some notable in their character.

Fig. 113 gives this temple of Segesta from the east. The soft stone has split in many places, and the authorities have put straps of

114—Temple at Girgenti, Sicily, called Temple of Concord. (From photo.)

iron and even board cases upon parts of the entablature which threatened to crumble away, as well as straps around some of the columns, but no other alterations or repairs have been attempted. The reader will note as a complete contrast to the monolithic columns of the Corinth temple that the Segesta columns are built up of very thin drums, ten of them to a shaft in some cases. The second column from the left in the picture shows vertical joints as well, but it is clear that these are not original; it is probable that the drums were originally complete, each in itself.

The temple at Girgenti, among the ruins of Akragas and known as the temple of Concord,[23] is shown in Figs. 114 and 115. It is of the normal type, hexastyle, with thirteen columns on each side; and

[23] The Grecian dedication is not known.

with this temple we approach very closely the perfected Doric style. There seems to have been no sculpture anywhere about the building, neither in the way of carved metopes in the frieze nor in the way of statuary in the pediment, but the building was completed as a very highly finished temple of medium size (about 140 feet long) with a perfectly normal plan, having those two porticos in antis which we call

115—Temple at Girgenti (see Fig. 114); the east wall from within. (From photo.)

the pronaos and epinaos, one of which is shown from within in Fig. 115. The walls of the naos were cut through with round-headed windows in the Middle Ages, and the interior was used as a church. This

usage may have helped to preserve the temple in its comparatively uninjured state in other respects, apart from the windows. The material is seen to be a porous stone, worn rough by the weather.

The temple at Girgenti, known as that of Hera Lakinia, is another building of nearly typical plan, of which all the shafts are standing except four, some of them having the capitals in place and carrying their architrave blocks. The surface of the soft stone is so much defaced by the weather that its forms are not easy to examine closely. There is in this building a very well-preserved stairway leading upward, probably to an upper gallery in the naos. This is built in the simplest and most massive way, by means of heavy slabs of stone built into the walls as they went up.

Top of grave-stele, with relief of "The Supper of the Dead." The man on the couch of honour is probably the person commemorated. The friend on the right is kept down in stature according to a law of isocephalism. In Central Museum, Athens. (From photo.)

CHAPTER IV

THE PERFECTED DORIC TEMPLE

FIG. 107 shows in the distance the temple at Pesto, popularly called the temple of Neptune, or temple of Poseidon, because the god of the sea was the presiding divinity of Poseidonia. Fig. 116 gives the interior view: and it is in this temple far more completely than any other that we can judge of the interior design of the larger buildings. The double colonnade on each side does not seem to have carried a gallery but merely the roof; and it is noticeable that the upper column is treated in every case as if a continuation of the larger column beneath. But for this continuing upward of the sloping lines, it would have been necessary to arrange the upper colonnade with its own intercolumniation. Probably it was thought that a single border rising from column to roof would have been out of proportion to the exterior design; moreover, the huge shafts would have been an obstruction and the cost of them excessive. What relation these lofty screens of columns bore to the roof structure, or to the design of the interior ceiling, is not fully known; it is considered below in connection with the Hypæthral Theory.

The general use throughout southern Italy and Sicily of soft stone explains what is found to be the nearly universal use of stucco to form a complete coating, not only to protect the building from weathering, but also to furnish a much better surface for polychromatic decoration than the stone itself could be made to give. In the very minute specification which Vitruvius gives (VII, chaps. ii, iii, iv) for stucco, a specification involving far more thorough work and undoubtedly a far better result than anything known to modern times, we see the continuation even into Imperial Roman times of this early tradition. Stucco, indeed, seems to have been the rule for the outer surface of these buildings when complete; and it is only when the hard marble of the hills of Attica was available that this covering was dispensed

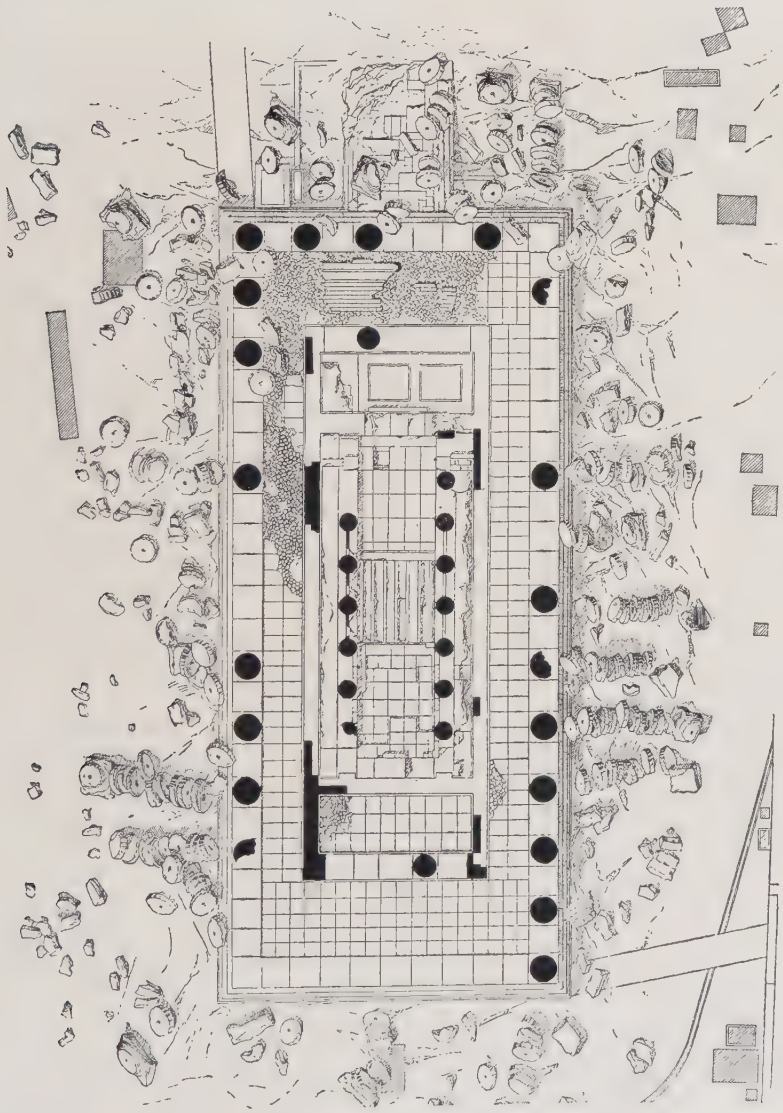
with. It is easy to understand, then, the nearly complete indifference shown by the Greeks to the actual placing of the joints of their work. In the building of that strange Olympieion at Akragas, the ancient forms were adapted to small materials, and even the colossal statues built up in courses of stone are more easily understood when

116—Interior of great temple called Tempio di Nettuno, at Pesto. (From photo.)

we imagine the whole building made to seem monolithic, from end to end and from top to bottom, by this covering of a uniform surface, nearly white in color, and easily receiving painted decoration of the most elaborate sort. The lack of desire for very large stones, even for monolithic shafts of columns, as mentioned in connection with the temple at Corinth, is partly explained by this custom.

At Thorikos in Attica there was a portico, of which sixteen columns still stand. These were never channelled, and we infer that the building was left by its creators very incomplete. This building has excited but little attention, and has never been so examined in its plan and structure that it can be spoken of with certainty: although interesting plates are given in the Unedited Antiquities of Attica of the Dilettanti Society, published in 1817.

The temple of Zeus at Olympia is also of the best time, but its very existence had been in doubt until the thorough exploration of the sacred precinct at Olympia was carried out by the German commission. Its history is well known because it contained that famous chryselephantine statue of Zeus by Phidias (Pheidias). The plan



117—Plan of Temple of Zeus at Olympia. (From Laloux.)

shows what was found when the silt of the river had been cleared away. This building was a hexastyle peripteros with thirteen columns on the flank, and arranged on the usual plan (see Fig. 117) with pro-

naos and epinaos distyle in antis: although there is doubt whether there was a door from the epinaos into the naos. The material was a defective limestone, only the cornice and parts of the entablature being of hard marble. The metopes of the exterior frieze were prob-

118—Metope of Temple of Zeus, Olympia. Herakles and Atlas with Hesperid nymph. (From Ausg. Olympia, Vol. I.)

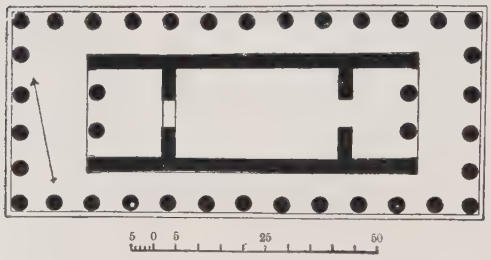
ably left smooth, and either painted or adorned by shields hung there as trophies and votive offerings. Over each of the inner porticos ("above the doors of the temple"—"above the doors of the back chamber," Pausanias v, 10, Frazer's translation) were six sculptured metopes, and the pediments were filled with sculpture. The record of the building in ancient historical writing is unusually complete, and it is accepted as of the time or just previous to the time of the famous building of which every one thinks when Doric architecture

is under consideration—the Athenian temple of Pallas Athene, the Parthenon. There is this remarkable fact, too, which must never be lost sight of in these comparisons, namely, that the improvements and refinements introduced by those Athenian influences which we sum up in the name of Phidias were evidently of extremely rapid introduction. Consider, for instance, the sculptures of the pediment and the metopes at Olympia. Figs. 118 and 119 give specimens of this sculpture:

119—Metope of Temple of Zeus, Olympia. Herakles and the Cretan Bull. (From Ausg, Olympia, Vol. V.)

carved metopes, Atlas with Hesperid nymph with Herakles is one from the east porch; the Cretan bull subdued by Herakles is a metope from the west end. Now, it is expressly stated that the sculptures of this temple were in hand, were in the way of being wrought, at the

same time with, or only five or six years earlier than, those of the Parthenon at Athens. There is no doubt as to the interest, and even the artistic merit, of the Olympian sculptures, but there is equally little doubt as to their archaic character. The sculptures of the Parthenon, on the other hand (see Figs. 191 to 193), are accepted by all as the most perfect types of the human figure treated grandly in art. Now, if so rapid a change was practicable in sculpture, something akin to it is easy to imagine or to accept when it is presented to us in the art of refined architecture. It was easy for the same controlling genius, whether we take it to be embodied in one artist or to be the result of a movement among the artist class of Athens. Expressed otherwise, it is easy to accept such a refinement as would give the Athenian forms, in architecture, immediately after those more archaic forms of Olympia, when we see the more elaborate forms possible in human sculpture equally rapid in their change from archaism to perfection.



120—Plan of the Theseion, Athens. (From Eu. A.)

Those Athenian forms, with all their refinement, are embodied in the temples which we call the Theseion and the Parthenon, and in the famous gateway building at the west end of the Athenian Acropolis, known as the Propylaia of Mnesicles. The style in its finally perfected form can be studied best in those three buildings.

First, as to the temple at Athens, called the Theseion: Fig. 120 gives a plan and Fig. 121 a view of the building from the north-west. The building is probably a very little later than the Parthenon: i. e., finished before 421 B.C., while the Parthenon dates are about 447–438 B.C. It is mentioned here as being one of the familiar types, and as the best single example of the accepted construction, masses, proportions, and details. The columns, six at each end and thirteen (all included) on each side, and the entablature which they carry, are of a very pure and faultless Doric. These parts, taken together, form the Order, and it is here that we can study the Doric Order best. Fig. 122 gives a measured drawing of the Order. The lowermost course of stone above the columns, which also is the lowermost architectural member, is known as the epistyle, because it rests directly upon the

columns; and is also called the architrave, even when the entablature crowns a wall, in which case it would not be an epistyle. It is absolutely plain in this building, except for the very small projecting moulding near the top of the course and called the tænia, and the short lengths of moulding beneath it, called each a regula, with their little drops on the under face, called guttæ. All this is designed to be cut from the same block. This plainness of the epistyle is common; in fact there is only one Greek Doric building known, the temple at Assos in Asia Minor, described above, of which the epistyle is adorned with sculpture. The second course of stone and the second important architectural member is the frieze, which, in the Doric style, always consists of a row of uprights called triglyphs, set to carry the

121—The Theseion at Athens. View from the north-west. Parthenon in the distance. (From photo.)

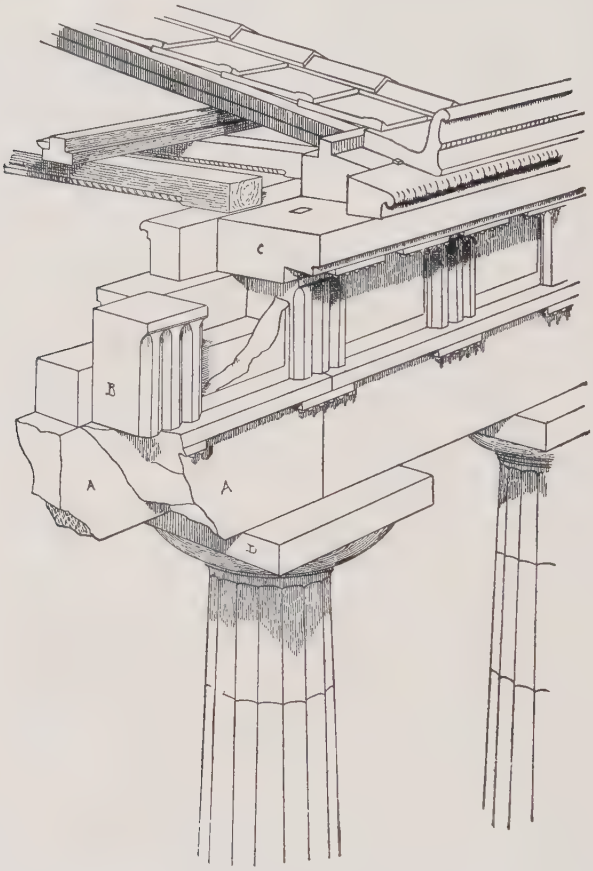
cornice, and alternating with the square spaces between, which are called metopes. The Greek word *ope*, pl. *opai*, means a hole left in a wall, as for one of the beams of a roof or ceiling; hence metope, the place between two such holes or the beam ends which fill them. But in the completed Doric style there is no longer any vestige of the beams at that level—the ceiling beams, whether of the naos or of the

122—Order of the Theseion. (From S. and R.)

pteroma, being set much higher. Hence the word metope has come to mean the space between two of the upright blocks mentioned above, the triglyphs; which indeed some writers take to be representatives of the missing ends of heavy beams, and this space may either be open, as it certainly was in some ancient buildings, or may be closed with a block or slab of stone or marble, the surface of which was obviously an excellent place for decoration. These nearly square surfaces were painted, or sculptured with reliefs which were brilliantly painted; and in the temples of the perfected style this sculpture was in the highest possible relief—that is to say, with the heads and hands and limbs often wholly released from the background, undercut, and finished all around like parts of a statue. The triglyph blocks or supports are cut in a curious way with two upright grooves incised with a section like a V, and the two outer upright edges dressed at the same angle as one of the sides of these grooves. Therefore, as each block is assumed to be cut with *three* grooves, the word triglyph (three cut) has been adopted as the name of the architectural member.

Above the frieze comes the cornice, which appears to rest upon and to be carried by the triglyphs. This member always includes a projecting tablet or plate, cut from the same stone with the mass which bears directly on the triglyphs, and this tablet is shaped on the under side so as to furnish a drip of some size, that is to say, an upward slope from the outer edge backward, so that rain-water cannot run back to the vertical faces behind, and down the frieze. In the Theseion there is also an outer drip-moulding (see Fig. 122) and the whole projection of the cornice is about 17 inches. On the sloping under surface are left in relief what are called mutules; flat tablets, each of them having guttæ projecting downward—usually eighteen arranged in three rows. One mutule is set above each triglyph, and one above each metope. The cornice may also include, when the building is complete, the roof gutter, which may be of terra cotta, as well as a member commonly introduced between the solid stone or marble block in which the drip is cut, and the gutter: but all this only along the two sides or flanks of a building like the Theseion, which has a simple two-pitched roof, for no gutter is needed along the slope of the gable at either end. Moreover the cornice will be inevitably larger, will have more members, at the side of the building, than where it goes across below the gable, because there, also, no gutter

is needed. Where it crosses the gable it is a mere shelf, and so it is called by a Greek word which means also a coping—geison. Then, where the cornice follows the slopes of the gable, the crowning member is cut in stone, but as wide as the whole side cornice and gutter

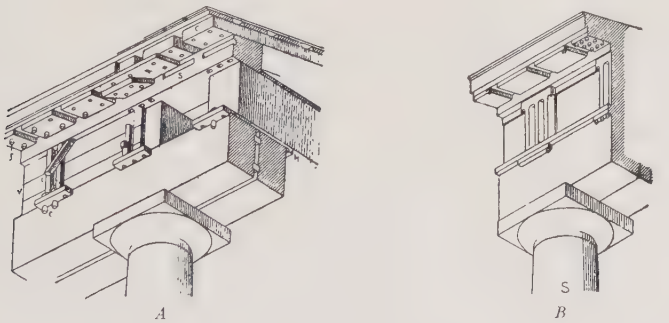


123—The Grecian Doric order: structure of the entablature. A, epistyle of two stones horizontally; B, triglyph; C, cornice; D, abacus. Drawn by D. N. B. S. (From Eu. A.)

taken together. This whole structure is shown in perspective in Fig. 123. It must be noted that this piece of wall above the columns is not known by any specific name: it is its face, its architectural entity, alone, which is named entablature. This entablature indeed includes architrave, frieze, and cornice; but the two faces of this piece of wall have each a separate architectural character: they are two entablatures, and not one.

There is continual attempt to show that the building of a Doric

temple is closely copied from the forms made necessary by wooden building. The well-known fact that the course of horizontal lintels, the epistyle, was of wood in early buildings, and the evident resemblance of the guttæ to nail-heads and of the mutules to plates of wood or short boards, has encouraged this view, and the triglyphs are assumed to be, in their origin, the ends of beams. It is unnecessary to insist upon the many objections to this view which are urged by those who understand and love stone building. The remarkable treatise of Auguste Choisy [24] shows how the building of the entablature may be thought to have originated in carpenter-work of a very modern-seeming character. According to this theory the columns were of stone as a rule, even in early days—wooden posts being a make-shift only; but the entablature was boxed out, boarded up, fitted with battens, secured by wedges and by pins—a real piece of carpenter-work differing from modern house-carpentry chiefly in the absence of iron nails. Fig. 124 shows Mr. Choisy's theory. *A* shows the epistyle of two heavy timbers held together with slight attachment, chiefly by pieces of board, *M*, which project on either face of the epistyle and are secured by pins, *c*. Upon this epistyle rest the roof timbers of the



124—Suggested origin of the details of the Doric entablature. (From Choisy, *Histoire*.)

portico, *P*, but the ends of the timbers are hidden entirely by light boarding, *V*. To keep this boarding in place, the little strips, *t*, are put in, fitting into mortises at the top and held below by the pins, *c*, which act as wedges. The Doric frieze is accounted for in this way. The cornice is made up of *S*, the roof-plate, and the rafters *C*, which are laid flatwise, quite in accordance with the well-known unscientific structures of early roofs. The boxing in of the ends of these rafters

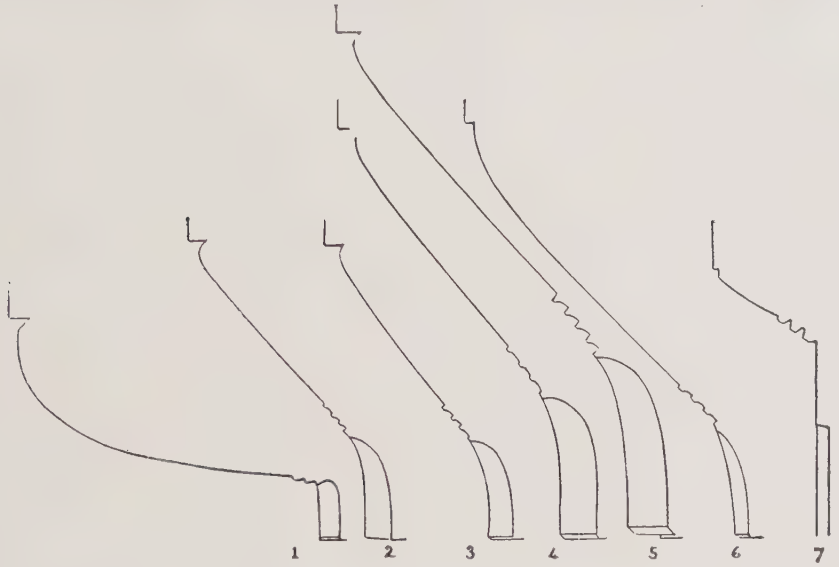
[24] Histoire de l'Architecture, Paris, 1899. Ch. XI, Architecture grecque.

by the strip which forms the face of the overhanging cornice and the boards secured to the under side of the projection, *R*, are held in place with pins as at *f*. And here is the Doric entablature complete, the very obvious expression of the true spirit of "an architecture in which there is dominant the idea of decoration by applied ornament." The reader is reminded that in Mycenæan art, as in other early arts, the idea of rough building covered up with plates or slabs of fine material of brilliant colour is entirely familiar.

Now, as to the columns themselves, they consist of two parts only, the shaft and the capital (differing in this from most other styles); but the capital, though commonly cut in a single block (see Figs. 104, 142), is always made up of two architectural parts, the bell, and the square abacus above the bell. This last is, with no exception, a square tablet, with unaltered, sharp corners neither sculptured nor moulded. It has been painted in some very elaborate fashion in all the buildings of which we have adequate knowledge. The bell, on the other hand, is capable of very extraordinary diversities of profile, although it has always what is known as an echinus, taking that name from the sea-egg or sea-urchin, a creature whose shell, when the spines are removed, is seen to have a beautiful curve, not quite ovoid, but more depressed on one side than on the other. Hence comes the application to a convex moulding having a somewhat similar curve, i. e., a long, slow curve on one side (in the Doric capital, on the lower side) and a shorter, more abrupt curve on the other side, the two flowing into one another without interruption and producing a member of great beauty. The tendency in the Doric style was continually to increase the breadth and diminish the curvature of the longer curve; that is, to make the under side flatter, and to reduce the minor curve above to a very small rounding backward (see Fig. 125). In short, the echinus tends continually to come nearer to a reversed, truncated cone, and in the later temples it is difficult to detect any curvature for the lower part—and that for four-fifths of the total height. The mouldings at the base of the echinus are considered below.

The shaft of the column is of a generally conical form, except that the sloping sides follow a slight convex curve. This curve is known as the entasis, and its exact amount and character were evidently the subject of continued thought and care on the part of the Grecian designers. It is never found that the curvature is so great as to change the general conical diminution of the shaft; it merely falls

in more slowly below and more rapidly above, following an extremely delicate curve. This shaft is then channelled from top to bottom with grooves which meet at a sharp edge, called in the technical language of the art an arris, and in this way distinguished from the flutes or flutings of the Ionic order and its derivatives. The section of these channels—their profile, the curve which they follow—is also of great importance. It is not circular in the best examples, but follows an undescribed curve which modern students have tried in many ways to construct by mathe-



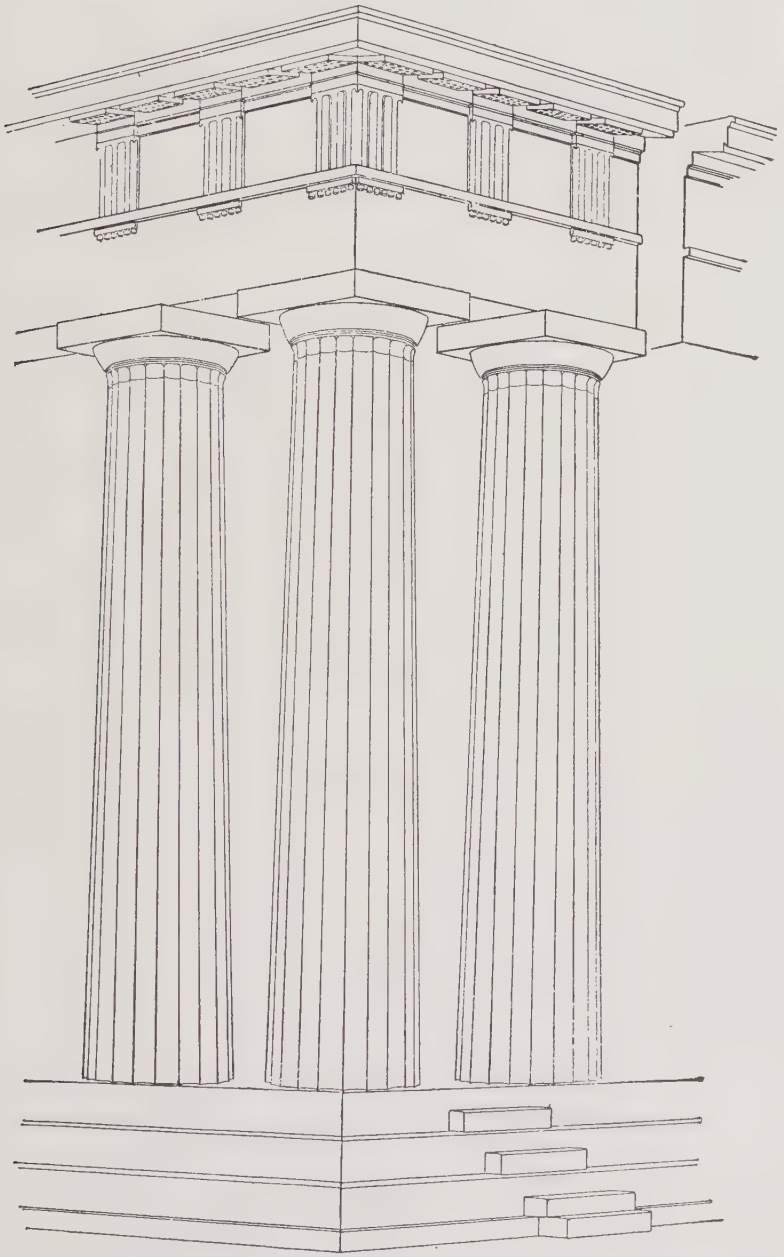
125—Comparative profiles of echinus from different Doric capitals. Nos. 1 and 6, early capitals found at Athens. No. 2, Theseion, Athens. No. 3, Propylaia, Athens. Nos. 4 and 5, Parthenon, Athens. No. 7, so-called Temple of Hercules, Cori. (From Eu. A.)

matical means. The number of these channels varies from sixteen to twenty-four, and the tendency is to use the larger number in the later temples. Thus the Theseion has twenty channels, and there are the same number in the Parthenon; and that may be considered the ideally conservative arrangement. Each shaft is built up of drums or tambours, of the whole thickness of the shaft. It is well known that the drums were put in place after being roughly shaped, and channelled afterward by continuous cutting of the whole shaft. The only modification of this system was that the channels were begun at the top—cut upon the uppermost drum before it was put in place (see Fig. 141)—this apparently as a guide to the workmen who did the final channelling.

In connection with this last refinement there must be mentioned the very curious horizontal mouldings which run around the base of the capital and the top of the shaft. These, as seen in Figs. 122 and 123, and in many of the photographic views, are important to the whole design. Those on the curve of the echinus, stopping it, as it were, at the bottom so that it shall not reach the shaft without interruption, are called the annulets, commonly four in number; their section in the Theseion and in other buildings being seen in Fig. 125, where it is shown that they project, each in the form of a square-angled fillet-moulding, from the surface of the echinus. The lowest annulet, in the Theseion, comes just above and immediately touches the outward curve at the top of the shaft, so that the annulets and the spaces between them serve to break the passage from the convex to the concave curve—and this was evidently a matter of moment. Cut on the uppermost drum of the shaft is also a moulding or group of mouldings, in the Theseion a mere groove, deep in proportion to its width. This is called the necking or gorgerin, but that term is also extended to signify so much of the shaft as is included between that moulding and the annulets—that is to say, the necking is sometimes spoken of as if it were the whole series of horizontal bands at the very top of the shaft. The shaft is often rounded out a very little at the top. The channels do not run straight up through the beginning of the capital, that is, to the lowest of the annulets, but flare out a little. The whole horizontal curve of the channel, and the arris which separates it from the next channel, curve outward in such a way as to give a softer connection with the bell above. It is sometimes thought a fault to soften off the upward slope in this way, because while it gives grace it takes away from the visible strength of the supporting member. The shaft always rests directly upon the stylobate, without base of any description, whether worked upon the lowermost drum or in the form of a separate block. All this is shown in Fig. 126, in which, however, the joints between the drums of the shafts are omitted that the finished effect after painting, as of a monolith, may be preserved. The entablature is shown in perspective section on the right; below, the high steps of the stylobate are shown, with intermediary steps added for the sake of ease of access.

It has seemed advisable to dwell in this way on minute details, because it is in these that the special charm of Grecian architecture depends—at least for modern students, who cannot see the colour

scheme—to whom the temples and porticos are white ghosts of their ancient splendour. It would be useless to analyze in this way Roman imperial building, or Byzantine churches or Gothic cathedrals, because their charm is to be sought in other characteristics.



126—The Grecian Doric order, corner of a peristyle. Drawn by D. N. B. S. (From Eu. A.)

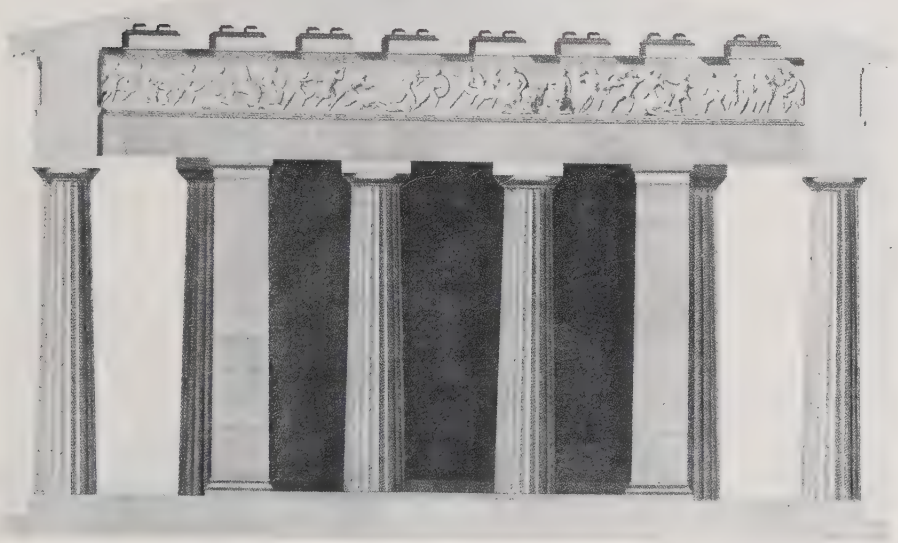
Returning for a moment to the plan (Fig. 120), let us see from it where the sculpture is chiefly applied in such a building. In the first place the metopes in the exterior face of the east end are filled, in the Theseion, with sculptures in rather high relief, these representing the labours of Herakles and other similar myths, all containing suggestion of vigorous action. Of these metopes there are ten in each narrow face, twenty-four on each of the side faces; but it appears that in the Theseion only eighteen in all were occupied by this free and vigorous sculpture. The triangular space in the pediment above is, in some temples, occupied by statuary of very great importance, and recent explorations have shown that an earlier practice was to fill that triangular space with relief sculpture. In the Theseion there is now no trace of such sculpture.

The plan (Fig. 120) shows how there are at the ends open porches, the pronaos and epinaos; and as each of these porches is treated with two columns between two projecting ends of walls, which themselves are treated as supporting members or piers with capital and base, the whole front of four uprights and the superstructure is of much architectural importance.

Fig. 127, then, shows a section across the Theseion, taken so as to leave out of consideration the six columns of the eastern end, and to show instead the two antæ of the pronaos, or at least their front faces; the two columns of the porch between the antæ and, at left and right, two of the columns of the external colonnade with a cut right through the entablature and the roof as it spans the open pteroma. This illustration, then, shows a continuous frieze; a band of figures sculptured in relief, being also expressive of full and free action, and not divided up into nearly square panels as is the frieze of the exterior. Such a band of sculpture, to distinguish it from the true Doric frieze with its triglyphs, is often called an Ionic frieze (even in a Doric building). It is noticeable that the piece of marble walling which rests upon the two columns of the porch and the two antæ is carried across until it meets the inner side of a similar piece of walling which surmounts the columns of the flank on either side, and which has the entablature carried out on each of its two faces. The plan does not show this because it is all overhead. It is not always found in Doric temples: its use here is to provide and insist upon the long unbroken frieze for sculpture.

If, now, we go up the steps of the temple between the columns

at either end, we find ourselves beneath this separately roofed portico, about 16 feet wide from the top step to the wall of the naos, and 45 feet from left to right—from north to south—between the top steps on both sides. If we pass along either one of the side passages which make up the pteroma, we shall pass under those cross-pieces of wall above the columns described above, and shall then find ourselves in another portico, separately roofed and as long as the naos, about 73



127—Cross section of the Theseion, showing "Ionic" frieze. (From S. and R.)

feet—with the plain, bare side wall of the naos on one hand and the nine columns on the other hand. It is quite common to have the naos of the temple entered from the east end only; the porch at the west end may then be enclosed, cut off from the rest of the naos; and it is then called the epinaos, or in Latin the posticum. If treated as a kind of treasury it is called the opisthodomos. The reader will understand, however, that there is not an opisthodomos to every temple; and that also there is considerable doubt and disagreement among students as to the use of each separate part of the naos. Even the term naos is used sometimes for the whole enclosed mass with solid walls, and sometimes for the larger room only, in which it may be assumed that there were kept the "cultus image," or figure of the

deity specially reverenced in that temple, and the offerings specially made to that same divinity.

The Theseion is quite a normal Doric temple. It is for that reason, and because it is in such good condition, that it has been taken here as the type to study. And yet the most interesting of all the points of view from which we can regard such a temple is that which shows best the differences between a building so taken as the type and the other buildings of the same general character. The plans of hexastyle temples are given in Figs. 89, 90, 92, 94, 96, 97, 108, 117, and 120 and the difference in their size is very noticeable; but the difference in their style of design was also very great. Fig. 128 shows the fronts of three of those temples whose plans have been given in the figures enumerated above, namely, the Theseion at Athens (our typical building), the temple at Bassai (see Figs. 137–140), and the great temple at Pesto, shown in Figs. 105, 107, 116. These are the east fronts only, and there is unquestionably room for doubt as to some of the details given, but the main differences in scale and also in proportion are very close to the truth, and it is instructive to see what Grecian design was busied with in this relatively very important manifestation of it. In the first place, it is noticeable, and this repels the student of design in all its manifestations, that the same scheme was thought fit for buildings of such different sizes. The student of decorative design generally finds that the scale of his details should remain comparatively unaltered, and that the number of those details should be increased or diminished; in short he is apt to consider the stature of man as his chief standard. Some increase, but not a very great increase, in the size of the pillars, in the width of openings, in the number of steps leading to the entrance, in the sculptured details, he will admit; but in general it is the addition of detail to detail which gives scale, and the great increase or the great diminution of the size of each detail is thought to destroy scale, to abolish a sense of relative size, to lead astray the mind, to dwarf a large building, and to make a small one seem unduly pretentious. These considerations the Greek architects defied absolutely, so far as their buildings remain to us, and the columns 7 feet 6 inches in diameter at Pesto, or those 8 feet in diameter of the great temple at Selinus, are of the same design, speaking generally, and of exactly the same number as the columns, barely 27 inches thick, of the diminutive temple of Nemesis at Rhamnus. And again, the same general proportion was maintained, as we infer,

in the vast front of the Zeus temple at Akragas, where the seven engaged columns are 25 feet thick.

Within the limits set in this way for the designer there was, of course, abundant chance for independent thought. The three eleva-

128—Comparative treatment of Doric hexastyle temple-fronts: three given on the same scale. Great Temple of Pesto, above; temple at Bassai at left, below; Theseion at right hand, below. (Selected from Denkmäler der Baukunst.)

tions shown in Fig. 128 demonstrate sufficiently the play of thought which the architect was allowed. He could make his columns more slender or higher, or he could make them shorter, with a larger entasis, with broader capitals. Undoubtedly the changes so easy to describe as these mark the slow improvement of Greek design toward the standard of the Theseion, 430 B.C.; but this change, constantly taking

place, was a deliberate change caused by the general preferences of the designers for newer proportions, the reduced diminution of shafts, the reduced spread of capitals, the reduced curvature of the echinus, the gradual formalizing and reduction of the hexastyle type to severe rules. The important matter of spacing of columns, especially in the exterior colonnade, is treated in many costly books which set forth the Grecian and the Greco-Roman orders, with all the columnar architecture which has resulted from their study. It is probable that the Greek architect of a good time considered in every case his own preferences, thought out his design in this as in other respects, drew and modelled, in plan and also in vertical display, his future building, and left his measuring until he had satisfied his eye and his spirit with his proportion. Now, in our longing to get at the secret of Grecian design, we measure and calculate and apply technical names to the measurements we make; and so the term "intercolumniation" is used to express the distance from centre to centre of two adjacent columns, or it may be taken in the clear between those two columns at their lowest point or at an inch or two above the stylobate, and in this latter case it is important to measure from the arris to the opposing arris, and from the circular curve of the plan imagined as continuous, disregarding the depth of the channels. So with regard to the size and height of the entablature. It is customary to speak of it in archæological descriptions as representing a given fraction of the total height of the column in the same building; but it is most unlikely that the Greek thought of it in that way; he was bound by a rule whose strictness we can hardly imagine as applying to us in modern times, but that rule left him free to vary the height of his stylobate and his frieze, and to vary the total height of his entablature, even as it allowed him to space his columns more or less widely.

There are, however, one or two refinements which the setter out of Doric colonnades rarely overlooked. One of these is in the narrower spacing of the columns near the corners of his peristyle. The outside intercolumniation on each side was smaller than the others. It is easy to see why this was done. The outermost column of all, when seen cornerwise so as to come against the sky or against the distant hills, would look lonely and, as it were, feeble, carrying, as it had to do, the corner of the building. It was an obvious device to bring the other columns nearer to it; and in doing this the artist found it easier to put his triglyphs where he wanted them in the frieze

above, getting one at the corner in every case, while elsewhere there was one over each column, accurately centred upon it, and one between. This was one more successful bit of careful planning.

The columns found in the interior of the naos have been discussed in connection with the great temple at Pesto (Fig. 116), and it is in connection with these columns that the famous hypæthral theory has been most often and most strongly urged. The theory as it exists in modern times is merely this—the supposed necessity of daylight admitted from above into the interior of the naos. It is natural to ask whether there was not some means of admitting daylight to the interiors of these important edifices. Some of the modern theorists, then, have assumed the existence of a kind of clearstory, obtained without altering the general slope of the roof—for all restorers accept as evident the uniform low pitch of the Grecian temple roof, and the absence of any such incongruous feature as a raised sky-light or lantern projecting upward from it. It is to be noted, however, that there is no real reason for accepting any such feature as a supply of daylight from above. The often quoted passage in Vitruvius (III, i) says that, in a certain building which he names and describes, the temple of the Olympian Zeus at Athens, there was an open court from which a part of the edifice received its daylight. There is no intimation that the inner naos was lighted at all except by the door, and no suggestion of a sky-light, lantern, or other light through the roof, of any sort. Vitruvius is not a careful writer and no authority could be less final when minute differences are in question; but it is that one passage of his which the advocates of this theory have to support them. The main reason, however, for the demand which so many students make for a roof-light is the importance and beauty of the temple-statue within, the value and charm of the dedicated offerings, or many of them, and the probability that the interior of a noble structure would itself be an interesting piece of architecture. Because of all these things, it is said, there must have been daylight. On the other hand, there is to be considered the amount of light which would be received by reflection from the floor and walls, when the great doors were open, under the sunny sky of Greece or Sicily; and with it is to be considered that indifference to bright daylight which travellers from the North find everywhere in Mediterranean lands. A dealer in fine carved furniture, delicate stuffs, precious church embroideries, and the like, in a city of Provence or of southern Italy, will live and attend

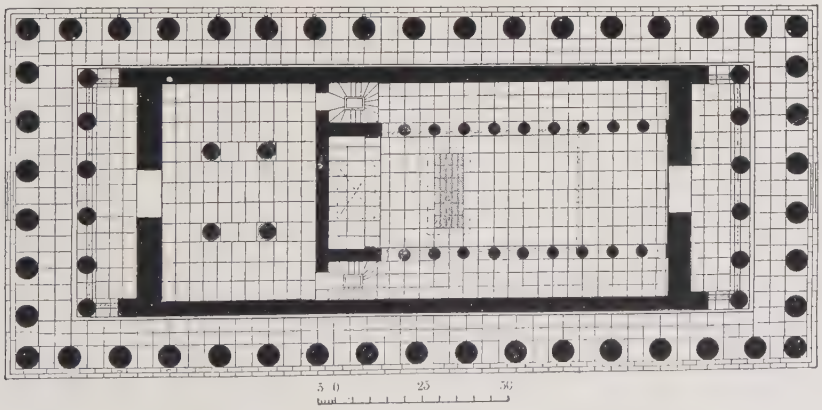
to his business in a series of rooms so dark that the visitor cannot, even after ten minutes' stay, discover what he wishes to examine; and the dealer never thinks of the importance to himself and to his goods, even when they are fine, of bringing them out into full daylight. In like manner the sombre interiors of the Japanese temples have often been described; and the absolutely dark interiors of the Egyptian holy places behind the great hypostyle hall have been considered in Book I of this work. It is partly because of this darkness that polychromatic decoration is used in such interiors. It has been pointed out by writers on Japanese art how successful is the colouring of the statuary —the colossal temple figures with gilded teeth and inset eyes of some gem, to enable their form to be seen in the semi-darkness under the roof; and the puzzle to moderns of the painting of the Egyptian tombs remains to emphasize the great importance laid upon such treatment with colour. No window is known to exist in any Greek building of the great time, nor indeed, during the independent existence of Greece; and to imagine a series of clearstory windows arranged something like dormers in the roof is to make a very bold assumption.

Votive Relief: upper part of stele recording a treaty between Korkyra (Corcyra) the middle figure, and Athens, represented by the goddess Athena, in the presence of a seated man, perhaps Demos—the people. In the Acropolis Museum, Athens. (From photo.)

CHAPTER V

EXCEPTIONAL DORIC BUILDINGS

THERE are two Doric temples only which differ in their general plan from those above described. The temple at Selinunte, on the eastern hill, designated by Hittorff as T, while Serradifalco and other writers call it Temple G, is octostyle. It is so completely ruined that no faithful plan of the stereobate (such as that given by Koldewey and Puchstein, plate 17) is of the slightest help to the student; and all restorations are merely conjectural. One other octostyle Doric temple is known, and that is the Parthenon of Athens. Its plan is given in Fig. 129, and the material for this plan is almost wholly adequate, leaving little to inference or conjecture.



129—Plan of the Parthenon, Athens. (From Eu. A.)

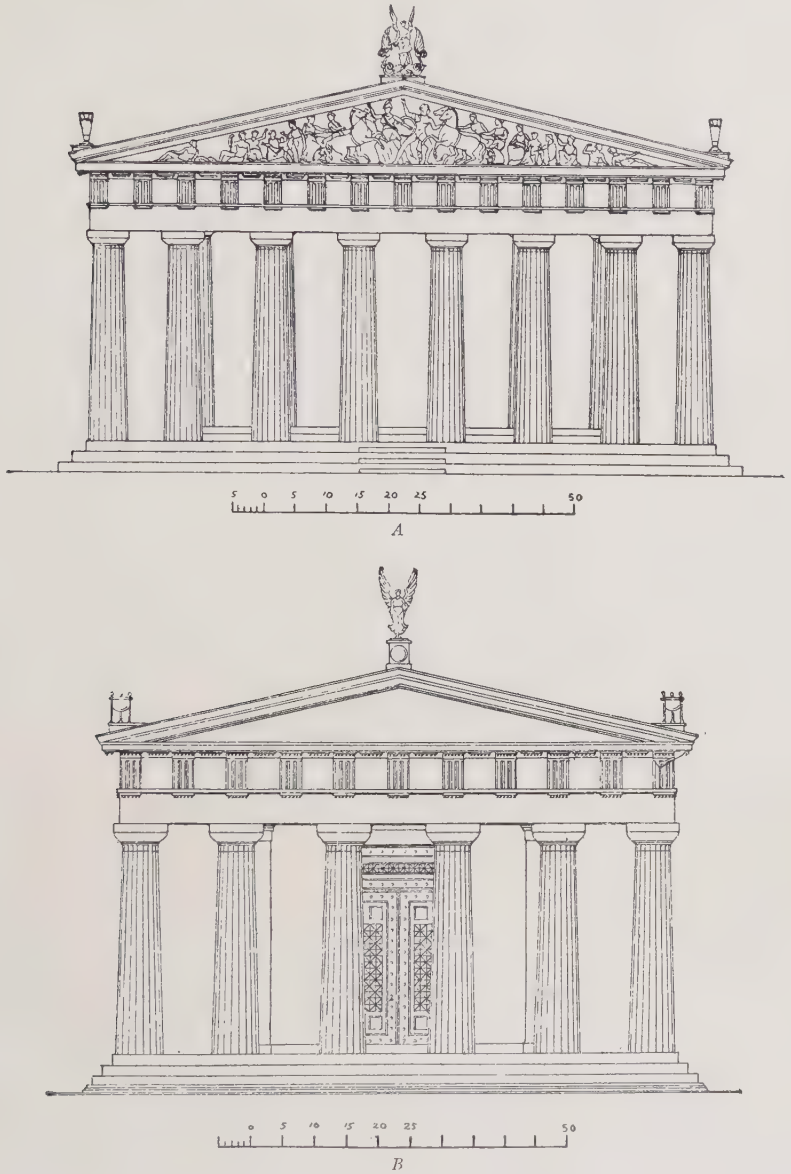
Its history is known, in part. It was begun about 447 B.C., after the Persians had been driven out of Attica, and just before the administration of Pericles began.

The Parthenon is octostyle instead of hexastyle, and that means that when we see it cornerwise, we see in one front and one flank a col-

onnade of twenty-four columns, forming two sides of a peristyle, but all in view at once (see Fig. 130). These columns are, indeed, higher in proportion to their diameter than those of most of the hexastyle temples, and yet when we compare a careful drawing or a model of the Parthenon showing twenty-four columns at once, on two sides, and the Theseion or any building of its class showing only eighteen columns, we are left with the doubt whether the Parthenon ever had so perfect a general aspect of refined proportion. Did not the builders, in their attempt to build an octostyle temple, in emulation of the still unfinished building they had heard of, over sea, in Selinus of Sicily—did they not miss some of that charm of proportion which had been brought to perfection in the many hexastyle temples? Was not the Parthenon strikingly low and broad? And this effect—was it not all

130—Parthenon from northwest. (From photo.)

the more marked when the building was seen from below, either from the streets of the city at the southward of the Acropolis rock, or from the approach, the uphill road leading through the western gateway of the Acropolis enclosure? Fig. 131 shows the elevation of a famous hexastyle temple put in close comparison with the Parthenon; the two end elevations being drawn to the same scale. The



131—Compared elevations of Grecian temple-fronts, hexastyle and octostyle. (From Eu. A.) (*A*) Temple of Zeus at Olympia. (*B*) Parthenon, Athens.

contrast here is not so great as when the two buildings are considered as seen cornerwise, but it is marked enough to raise our critical question. It may well be that we of modern times should vote with the enormous Grecian majority! However this may have been, it is certain that in the minor parts of the design, minor but still of extreme im-

portance in that task of perfect refinement to which the Greek builders had set themselves, the Parthenon is the model of perfection. The intercolumniation has been most carefully studied; the smaller span of this at the corners, the entasis of the shaft, the spread of the echinus —all has been treated with an unmatched thoroughness. The drums of the columns were ground together, to secure perfect jointing: a cylindrical plug of hard wood being fitted in the centre of the lower drum, the upper resting upon it, and rotated a little way and back again, by means of the projecting lugs named above. The jointing of the architrave stones and of those elsewhere in the building is of a fineness so remarkable that the processes used remain unexplained. And the student remembers that the Parthenon was not coated with stucco, like most of the Doric temples. There are further refinements which, although they may exist in other buildings, we find in their perfection in the Parthenon. Thus, the corner columns are found to slope inward as they ascend; not, indeed, so much as to make the innermost surface overhang, but still noticeably. Again, the columns next adjoining the corner slope sidewise, each toward the centre line of its own colonnade; and probably that slope kept on diminishing until the two columns in the middle stood erect. Again, it is found that the top of the stylobate is not horizontal, either on the two fronts east and west or on the long sides. On every side it is curved upward toward the middle. With a chord of about 101 feet the upward rise is 2.64 inches at the east end. A similar convex curve is found in the epistyle, for, when scaffoldings are erected and the lines of the entablature are looked at from the end, "sighted" as the phrase is, they are found to curve in the same direction as the stylobate, but with somewhat less boldness. At the east end of the Parthenon, the chord being about the same as that of the stylobate, the rise is 2.04 inches. On the south side the stylobate is about 226 feet long; at the west end it is 3.16 inches lower than in the middle; at the east end 5 inches lower.[25] These vertical curves may be compared with the horizontal curve in the court of Medinet-Habou (Book I, Fig. 28). In the case of the Greek monument these curves have the obvious effect of preventing any appearance of sagging in the epistyle —for a long straight line above the eye tends to seem curved downward in the middle; and the top of the stylobate may be thought to have been

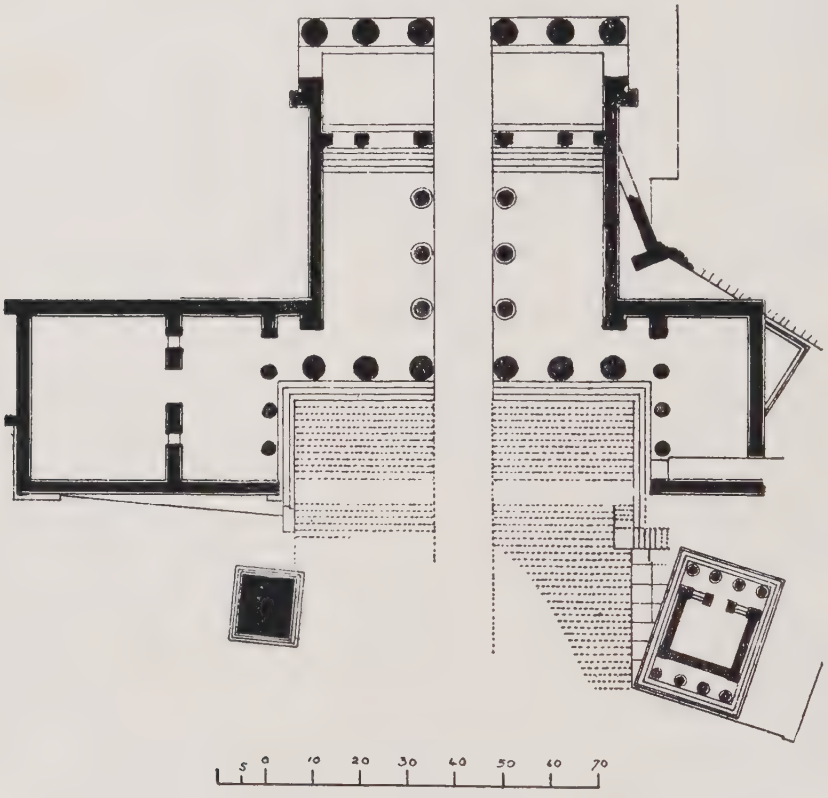
[25] These dimensions are taken from plates x and xii, Penrose, The Principles of Athenian Architecture.

so built to harmonize with the under surface of the epistyle. On the other hand, though these refinements of building have received special attention of late years, there are those students who think them sufficiently accounted for by the desire every careful builder, of artistic rather than formalized habit of mind, would feel, to avoid the rigidity of perfectly straight lines, mathematically correct and exact. The same subject comes up with reference to the Romanesque building of Europe, as shown in the second volume.

Of the Doric style were also certain buildings of unusual plan, most of which have perished or are so completely ruined that their design can only be traced by slow comparison. One of these is the ruined building, the Tholos at Epidauros. The plan is traceable from the stylobate, and the fragments found are sufficient to establish the general character of the building. It was Doric as to its exterior with twenty-six columns in a circular peristyle, but Corinthian within, with columns ranged around a rotunda and carrying an inner entablature. It will be considered further in the section dealing with the Corinthian order. Here it needs only to be stated that the Doric order of the exterior is of great beauty, and marks the culmination of the style in Grecian hands without admixture of foreign influence of decadent taste. The Tholos is recognized as having been built about 310 B.C.

Another building not a temple requires notice in connection with the Doric temples of the greatest period. This is the famous Propylaia of the Acropolis at Athens, a building of whose history we know relatively much. It was built from the design of Mnesicles in the years following 437 B.C., and is, therefore, nearly contemporary with the Parthenon. It is so nearly complete that the conjectural restorer runs but little risk. The plan (Fig. 132) shows great flights of steps in the western approach, which steps are undoubtedly later than the days of the splendour of Athens. Some writers make them Roman of the time of Hadrian, or even later; others, again, have thought that they belonged to the times of the Christian dukes of Athens. All seem to agree that, in the days of Athenian greatness, the processions which ascended the steep rock on this western side followed a path, taking the easiest slopes, and therefore not direct. This brought them to the lowest step of the portico above, namely, the third step shown in the plan outside of or below the first or westernmost colonnade of six large columns. Here begins the even and smooth pavement and the

ordered disposition of the Propylaia. Those three steps are high and broad, of dark blue stone, while all above is white marble of Pentelicus. In the middle intercolumniation, where the columns are wider apart by much than at the sides, the rough path goes on, and there is no doubt that a horse, and even a light chariot, would have passed up the

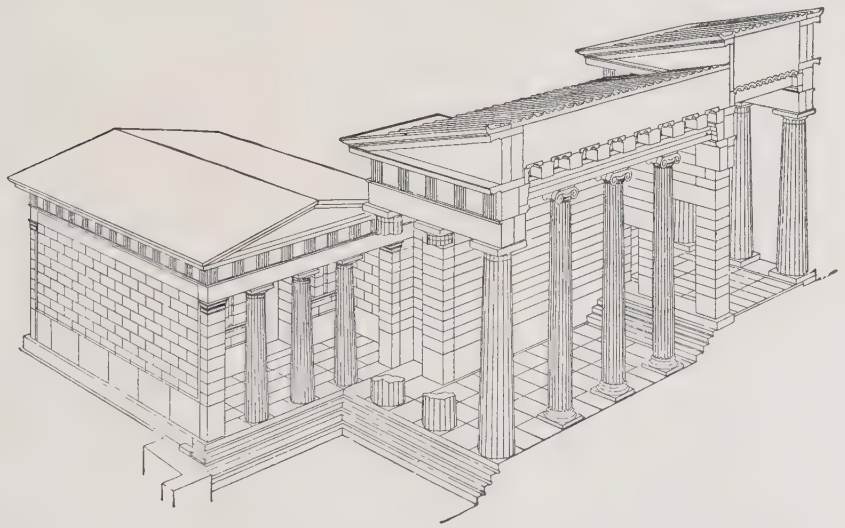


132—Plan of Propylaia of Acropolis at Athens. (From Eu. A.)

rocky path straight through the porch, then onward, at a lower level than its pavement, and so out upon the top of the rock passing between the eastern portico of six large columns. The level of the pavement rises where five steps are marked between these two hexastyle colonnades and is thus made from 2 feet to 3 feet higher than this path. The six columns, three on each side, which line this pathway, are Ionic of a very delicate design, and this is indicated by the circle outside of the solid disc which stands for the shaft; for Ionic columns have a moulded base of some projection. All the other parts of the Propylaia are of the Doric style; including four porticos, namely, the hexastyle

portico, fronting the west and the approach, the two small porticos of three columns each, quite irregular, but serving a subordinate purpose, as will be seen in the plates which follow, and lastly the eastern colonnade, fronting the sacred precinct itself.

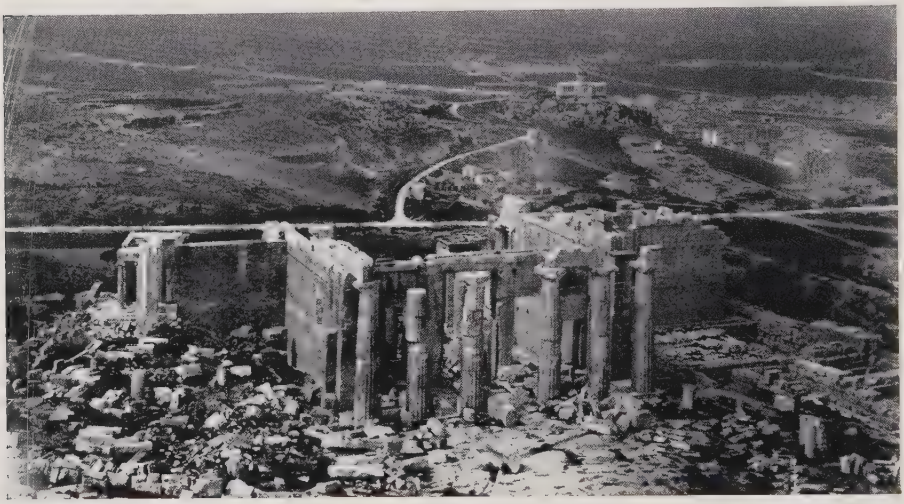
Fig. 133 shows the arrangement of the small porticos of three columns, and their relation to the great hexastyle portico of the west approach. The rocky pathway alluded to above is to be imagined where the substructure of the portico—the stylobate of four steps—is cut squarely off. This figure shows also the place and function of the Ionic columns, three on each side of the sunken pathway; then the ascent of five steps, leading to the eastern portico on the higher level. Fig. 135 shows the approach from below from a point a little north of the east and west access of the Propylaia. The huge pedestal on the left is undoubtedly of Roman building, and may be disregarded at present. On the right is seen the little temple



133—Perspective section of Propylaia (see Fig. 132). Drawn by D. N. B. S. (From Eu. A.)

of Athena Nike—Athena the Victorious, or, as it is often called, Nike-Apteros, the Wingless Victory, probably with allusion to the prayerful prophecy that Victory might never fly from Athens. This little building had been concealed by a Turkish tower of defence, the masonry of which was partly built upon and around it, and included, moreover, many detached blocks. Under the first Bavarian king (reigned 1832–1862) the Turkish fortifications were destroyed, and

then the temple was, in a sense, rebuilt—all the stones which could be identified being hoisted into place. The exquisite parapet with sculptured figures which edged the high stone wall above which the temple stands was never replaced, because there was absolutely no means of deciding on the order of the slabs. They remain, there-



134—The Propylaia (see Fig. 132). Seen from the entablature of the Parthenon. On the left, Temple of Athena Nike. (From photo.)

fore, in the museum at Athens as detached bas-reliefs. One of these is given in Fig. 193.

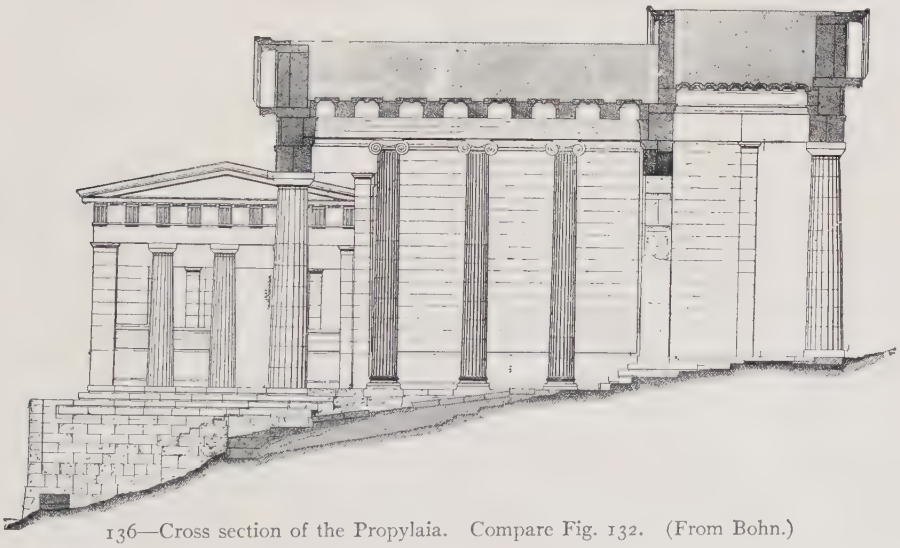
One very interesting thing in the disposition of the Propylaia is the wall, pierced with five doors, which separates the eastern from the western porch. In the plan it shows merely as four separate piers and two engaged or attached piers, but Fig. 133 and also the photogravure (Fig. 135) show that it is really a massive wall, although the doors are large in proportion to the piers between them. Fig. 134 is a view of the eastern front, showing the same wall with its five doorways, and that hexastyle portico which faces inward upon the Acropolis. The rugged rock under foot, seen in the photographs, shows what the sloping approach to the Propylaia must have been in the time of Pericles. How far it was worked over with the tool to afford a hold for horses' hoofs and the sandals of men and women it is hard for us now to guess.

Fig. 136, then, is a section through the whole structure, showing the general course and the general level of the rocky path; and close

135—Propylaia of Acropolis (see Fig. 132). Roman pedestal on the left; Temple of Athena Nike on the right. (From photo.)

above this, on the left, the three steps of blue stone of Eleusis, the sectional view of the western portico, the three Ionic columns, the section through the wall of five doorways, and that of the eastern portico. Farther to the left is seen the south front of the north portico of three columns.

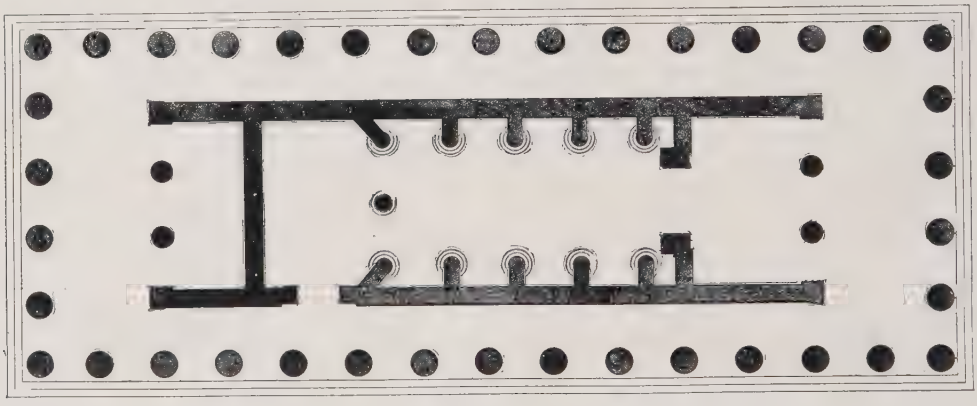
On the west coast of the Peloponnesus, near the ancient city of Phigaleia, is the temple of Apollo, built high up on the side of Mt. Kotylion. The place was known anciently as Bassai, and Apollo was here worshipped under the surname of Epicurius (Epikourios), or the giver of health, probably on account of the high repute of the mountain as a health-giving region. The temple has kept almost the whole of its peripteros of Doric columns, but none of the superstructure except one course of stones—the epistyle—nearly complete. The interior is almost entirely in ruins; but this interior is of extreme importance because the fragments are all there, and from them it is learned that the long and narrow naos, like those of the Heraion at Argos and the Heraion at Olympia, was divided up by five short walls projecting from either side (see the plan, Fig. 137).



136—Cross section of the Propylaia. Compare Fig. 132. (From Bohn.)

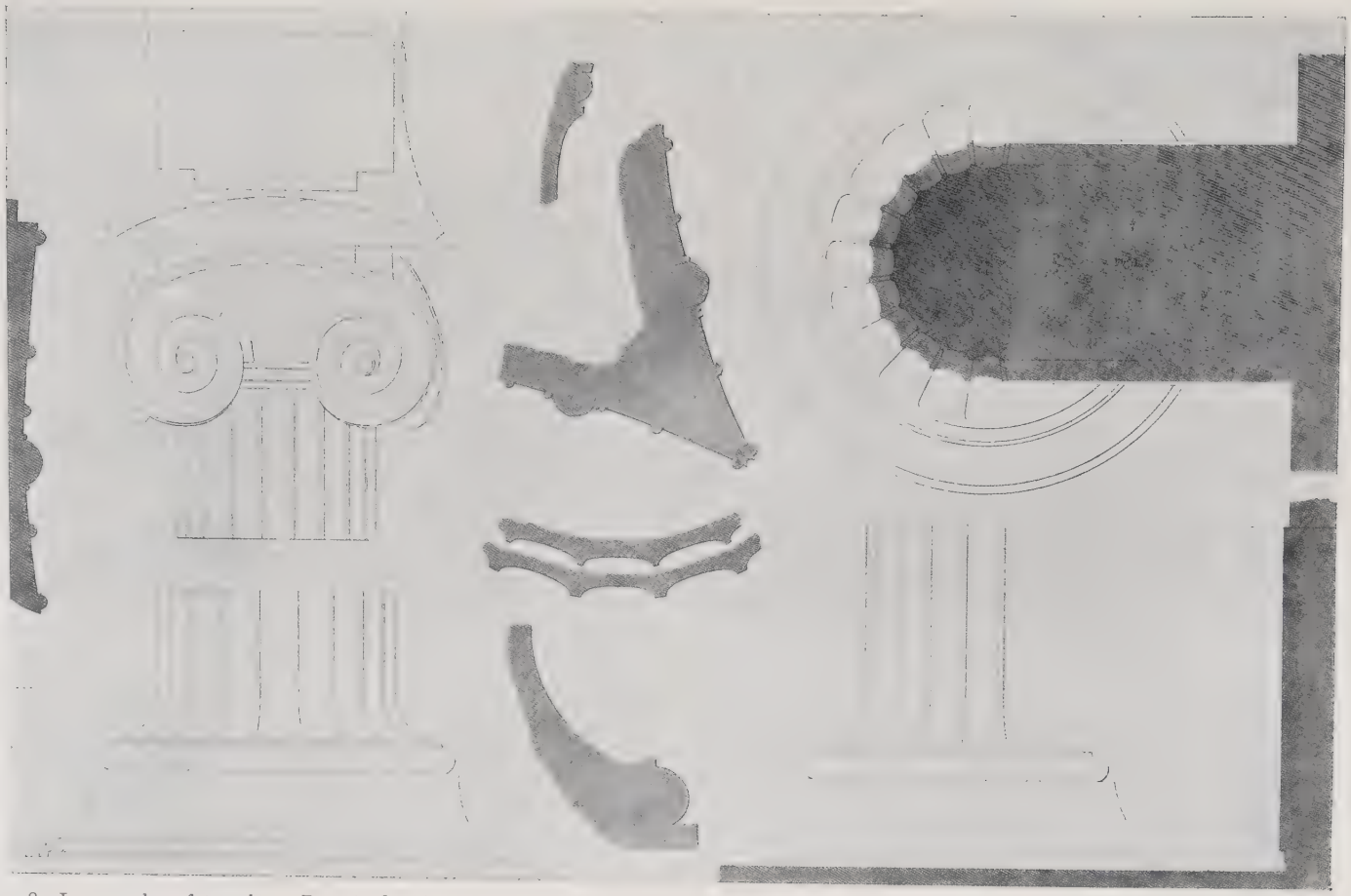
Each of these wing walls or buttresses was finished on the inner edge with a rounded surface, forming a half-shaft of a column of early Ionic style; while the capitals, as found among the ruins, have three faces. The capitals of these columns go to demonstrate the irregular and undetermined character of the earlier Ionic—of the length of

time it took to bring into harmony and into a form satisfying to the Greek artist, this scroll capital. Fig. 138 gives one of these capitals, and we are to remember that it is not required to have two faces and two ends, nor yet four faces, as in the case of the much later styles considered below, but merely a front toward the naos and two other visible sides, which need not, of necessity, meet the naos-front at right angles. This, accordingly, is what has been done—Fig. 138 shows how a single block of marble, measuring about 18 inches in height, has been so cut as to supply the uppermost member of an Ionic shaft, and three flat-faced fronts of an Ionic capital; that is, three



137—Plan of temple at Bassai, near Phigaleia. (From C., K., etc.)

faces of the capital with two volutes to each. These volutes are merely indicated by slight fillet-mouldings projecting from a flat surface. Upon this block a much thinner block is set, to form a separate abacus which, however, has but little character, being cut rather like a cornice-moulding than with special reference to its position. Above these capitals, with their very primitive and indeed awkward appearance, there ran a most elaborate epistyle, in which, however, the full proportions of an entablature are not preserved (compare what is said of the "Portico of the Maidens" on the south side of the Erechtheion at Athens), having only a broad frieze with a narrow cornice above and a very slight group of mouldings below. This frieze is the famous Phigaleia frieze of the British Museum, which, after the naos-frieze of the Parthenon, has attracted special interest as an elaborate and complete study of action and movement by the Greeks of the central time. The Phigaleia frieze, however, is far inferior to that of the Parthenon in its quality of sculpture. This



138—Inner order of temple at Bassai; fluted half-shaft worked upon a buttress-wall, with capital showing three faces of generally Ionic style. Two plans, two elevations, details. (From C., K., etc.)

use of the Ionic column in the interior of a Doric building, as if this order were considered the very latest piece of refinement in Greek art, is seen in the Propylaia of Athens, in a very remarkable fashion: the style being fully developed. These columns of the Athens building (see Fig. 136, and the description of the Propylaia) are slender and

139—Temple at Bassai, from the south-east. (From photo.)

graceful in their form and of a quite typical character as pieces of delicate Ionic; and their capitals, which are not in place, but are preserved, are nearly as delicate in their design as the most perfect examples known, such as those of the Erechtheion (Figs. 155–157). But the superstructure seems to have been slight and not at all a complete entablature. It is not to be forgotten that the full order was used by the Greeks only when they had in hand the full height of the exterior building, from stylobate to cornice. Then, indeed, the width or height of the entablature occupied the thoughts of the designers, and it was felt that all three parts of the entablature were needed, each in its full proportion. When, as in the "Portico of the Maidens" and the interior fittings at Bassai and the Athenian gateway building, there was an ordonnance of very small size—an open loggia or a decorative inner colonnade—or when, as at the Bassai temple or at Athens, the roof above fixed the height of the screen of columns, this necessity of the full entablature disappeared. Fig. 139 is a photograph of the Bassai temple from the south-east, the northern end being the prin-

cipal front—a very unusual disposition. The eastern colonnade is seen on the right, and half hidden by it is seen one of those wing walls of the naos, built of smooth stones, but with the inner edge brought to the semblance of a half-column. The wall of the naos from which that wing wall projected inward has fallen almost wholly. Fig. 140, taken from the same general direction, shows the inner face of the western colonnade, and between those columns and the spectator, the lower parts of all five of the wing walls on that side—two of which are visible also in Fig. 139.

A Corinthian capital, much shattered, was found among the ruins, and it has been assumed that one Corinthian column stood on the axis of the naos (see plan) at the southern end. This placing of the column is quite uncertain, and the capital itself is now hardly

140—Interior, temple at Bassai. (From photo.)

recognizable as of any style. It is interesting, however, to note the gradual introduction of the richer orders in the interior decoration of the Doric buildings. It is very probable that the Ionic details came into Greece from Asia as peculiarly fit for delicate internal adornment.

CHAPTER VI

METHODS OF CONSTRUCTION

DORIC architecture is the result of life in a mountainous country not very fertile, not very thickly wooded at any time, a land in which easy and luxurious life would be hard to find, even for the few wealthier men. Even though the habit of slave-holding, which in the fifth century gave leisure to the few thousand free citizens of Attica, were extended to the country at large, there would still be, naturally, a life of much toil by masters and slaves alike, and even in company. It is impossible now to ascertain how far the work of the building of Doric temples was done by travelling companies of free men, in some way akin to the organizations of masons in the European Middle Ages, and how far gangs of slaves working under intelligent direction were the real builders. The extreme simplicity of design and of workmanship allows of either supposition.

The beginnings of the Doric style must have been very soon after the immigration of the Dorians, about 1100 B.C., as mentioned above. As, however, we have no means of dating the earliest approximately perfect specimens of Doric art, so both the beginning and the end of the time of preparation remain uncertain. We only see distinctly that the style is in good shape and with all its traditions fixed as early as 550 B.C.

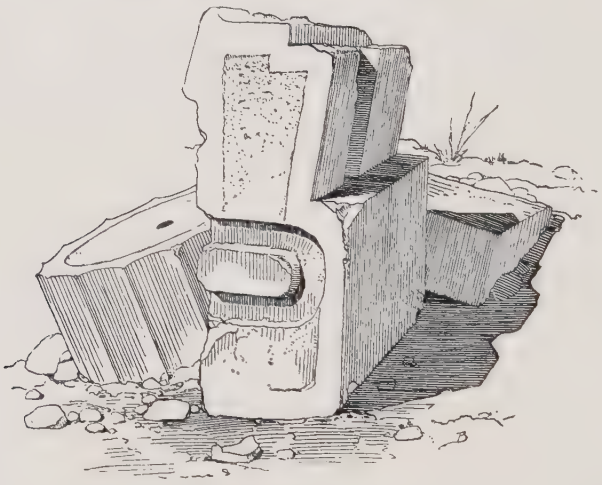
For the constructional character of the style it is unnecessary to mention the use of crude or fired bricks, except as traces of their employment have already been cited. Polygonal stone walls exist only in a few buildings of no great importance, such as the small temple of Nemesis at Rhamnus, and there is no reason to doubt that these are fragments of very early work which happened to be available. All the construction of the perfected Doric temple was of dressed stone and in fairly large blocks. The building up of the shafts of

columns by means of separate drums has been mentioned above. It seems probable that where great excellence of workmanship was aimed at, one drum was rotated upon another by means of a wooden pin inserted firmly in the lower drum; but this rotation was of only a few inches, probably, forward and back again, many times repeated. That would suffice to bring the two beds, already carefully dressed, to a perfect adjustment. The practice of leaving the middle part of the bed sunk below the edge, so that the whole weight of the super-

141—Drums for columns, found about 1883 in excavations on the Acropolis of Athens. The Acropolis Museum in the background. (From photo.)

structure came upon the raised border, seems to have been very general. But that border was made so wide that there was nothing to fear from such a method of construction, while it greatly facilitated the production of perfectly close-fitting joints. These drums were moved and hoisted into place by means of ropes secured to the lugs left when the stone was cut, and having sometimes 6 or 7 inches of projection, sometimes much less. Those of the marble drums found on the Acropolis of Athens, in the filling of the rock-cleft just east of the Parthenon, are not more than half as large. Fig. 141 shows two of those blocks, as they lay, in 1883, in front of the Acropolis

Museum. The left-hand block is the top drum for a Doric column, with the channelling begun, as a guide to the stonecutter who would do the channelling after the drums were all in place. The right-hand block is a rough drum with its lugs not yet removed, although the drum has been assigned to its future place in the shaft, and the work of cutting it to fit its place has been begun. The stones of the epistyle,



142—Drum of a column and block of the cornice; temple at Assos in Asia Minor. (From Assos Report of 1881; pub. 1882.)

the triglyphs, the stones of the cornice, were hoisted into place by ropes passed through U-shaped channels cut in the two vertical beds. Fig. 142 shows a drum of the Assos temple, and near it an unfinished cornice-block, both drawn by Mr. Bacon on the site of the temple during his first explorations. The two ropes of which such loops were made and by which the stone was raised and then lowered into place could then be pulled out easily through that groove.

The Greeks seem to have cared little for setting their stone on the quarry bed—a precaution frequently insisted on by modern engineers. Stone lasts longer if set in that way; but the almost universal habit among the Greeks of coating the work with stucco would remove that special reason for this precaution. On the other hand, stones set on edge, with the stratification nearly vertical (or, as the French expression is, *en délit*, there being no English term for it), are much stronger against cross strains than those set on the quarry bed. A lintel, such as a block of a Greek epistyle, will bear a much greater weight if the stone is set with the natural bed vertical. In this way,

too, it was more easy to make the epistyle of two, or even three stones in horizontal thickness, while of one stone only in height, thus saving great trouble and cost in transportation, and diminishing the chance of ruinous breakage. Another device for limiting the risk of the breakage of lintels was that of setting the jambs of a doorway with an inward slope so that the horizontal width of the opening might be about a foot less than the width at the ground level (see Fig. 143).

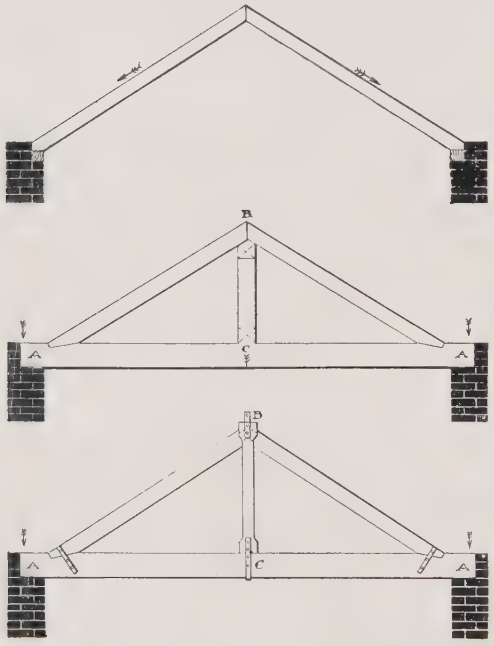
It was almost a universal custom to put the stones of the wall into place with their outer faces still rough. Often an inch in thickness had to be dressed away to bring the face of the wall to its final plane. It was also customary to protect the edges of the beds by a special projecting rim raised an inch or two above the general surface, which rim was also cut away as soon as the stone was finally set. The stones of a continuous wall, as of the naos or sekos of a temple, might be set in a single row, each stone having two faces,

143—Front of small building having parastades with Corinthian capitals, and doorway with sloping jambs, at Rhodiapolis, or Rhodia, in Lycia. (From Petersen and von L.)

within and without, or the wall could have a central joint (two stones of approximately equal size making up the thickness), or finally a thick wall might be built of two facing stones with rougher material between. As in all epochs, these different methods were used simultaneously by the Greeks, and even in the same buildings; nor is it possible to fix a date for the more frequent employment of any one

of them. The commonness of their employment would depend also upon the quality of the materials at hand.

Mortar was never used during what we call the classical epoch, that is, the time of advanced and carefully managed building. The latest trace of any such material in Greek work is in the rough walls of the citadels of Tiryns and Mycenæ, where a clay mixture seems to have been used rather for filling than for mortar in the modern sense. It is to be noted that, in all stone masonry, mortar may have a far greater utility in providing readily a solid bed for irregular stones laid upon it than as an adhesive substance. In walls of flat-bedded or shaped stone, adhesiveness is hardly an advantage. As the later Greeks aspired to almost invisible joints, stone bearing directly upon stone, they had no inducement to use mortar in their work.



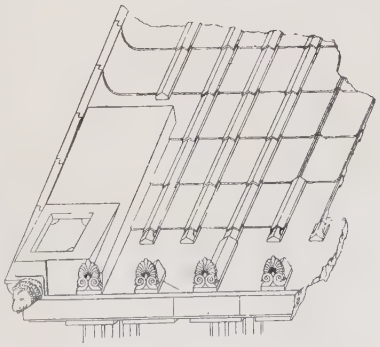
144—Roof construction in timber: First, two rafters which tend to push the walls outward; second, horizontal beam which supports rafters at A A, and also at B by means of post B C; third, scientific or "triangular" construction, in which B C is not a post, but a suspensory tie.

As to the roofs of the temples, nothing is absolutely known except from a certain document which has been preserved — a specification for an arsenal at the Piræus, the principal seaport of Athens. The subject has been worked out very thoroughly by Mr. Choisy.[26] It is only necessary to state here that there seems to have been no approach to scientific carpenter work, nor any knowledge of the triangular framing of a truss. Heavy timbers served as lintels exactly as stones would have served had the unsupported stretches been shorter. These timbers carried the sloping roof by means of uprights bearing directly upon them. In such a roof the beam *A A* (see Fig. 144) is heavy, and strong to resist cross pressure, and the post *B C* bears upon it and

[26] Histoire de l'Architecture, 1899, Ch. xi (Vol. i, 279 ff.)

supports in its turn the upper ends of the two rafters, *A B*, *A B*. In a constructional roof, *A A* would be a tension-piece, and would hold the feet of the rafters; and *B C* another tension-piece, holding up *A A* lest it should sag in the middle. In more elaborate roofs the distinction is equally obvious.

As regards the ceilings, visible from below, heavy timbers were laid across the pteroma from the dwarf wall of the colonnade to the wall of the naos, and these timbers, laid horizontally, were ornamented by terra-cotta tiles richly painted. In many cases they were concealed entirely by these tiles, which were cast in such a form, like three sides of a box, as to be easy to slip upward upon the timber and to hold there with any nail or similar fastening. The roof of the naos, then, was built of timber in a more obvious fashion; but it must not be forgotten that the Greeks seem to have had no knowledge of the truss, or of any of that framing by triangles which became the very essence of roof construction from the moment that the secret was discovered. The timber must have been used in the way of simple trabeated construction, as the stone was used, giving direct horizontal and vertical support. This sloping roof was then covered with tiles, sometimes of fine marble, but often of earthenware, of which fragments are often found. The use of earthenware tiles of the pattern known as ridge-and-furrow, that is, with alternately a raised, curved member, and a hollow or flat member (see Book V, Fig. 270), gives rise to that very curious ornament, the antefix, which fringed the top of the cornice along each flank of the temple. When there is no gutter these upright, fan-shaped pieces of terra cotta or other hard material were used to cover and conceal the hollow left beneath the ridge of these tiles; but their use was retained even when the marble-tiled roof was laid with its joints covered merely by a series of smaller, overlapping tiles. Fig. 145 is a restoration by Penrose[27] of the roof at the southwest angle of the Parthenon. Nearly



145—Marble tiled roof of Doric temple, with antefix and water-spout. (From Penrose.)

[27] An Investigation of the Principles of Athenian Architecture, by F. C. Penrose. Enlarged edition, London, 1888.

all the details are entirely authentic, for the stones are still in place. Here is seen how marble antefixes are used, sometimes, really to close the opening beneath the ridge-tile, but sometimes for ornament only, while the actual need is supplied by a wholly non-decorative projecting member worked upon the solid marble cornice. It is a curious instance of incipient degeneracy in the Parthenon itself, this use as a mere ornament of a member which had been for centuries a necessary feature treated decoratively.

Bronze Greek bust, of disputed epoch, called a portrait of Ptolemy Apion, King of Cyrene; thought also to be a female portrait. The curls of hair are separate, flat ribbons, chased, twisted spirally, and secured beneath the headband. Found in the Villa of the Papyri, Herculaneum; now in the Naples Museum. (From photo)

CHAPTER VII

THE IONIC STYLE

THE Doric style is the true Grecian architecture, arising in Greece proper, and developed by the people of Greek blood. The Ionic style, with which we have now to deal, shows much Asiatic influence: and indeed its several elements can all be traced to Persia or to the early states of Western Asia. There are buildings in Asia Minor, very primitive in structure and in form, and therefore hard to date even approximately, in which there is seen the simplest form of the Ionic capital. That name Ionic is given by the

146—Upper member of Ionic capital, volutes and abacus, cut in one block; found on the Acropolis of Athens. (From photo.)

Roman author Vitruvius to that order which has capitals of an abnormal type, not alike on all sides, but each having two flanks and two ends. Their marked feature is the arrangement of four scrolls, or volutes, in pairs, on two of the sides, and two generally cylindrical pieces crossing the two ends of each capital, and connecting the pairs of

147—Face of a rock tomb in Lycia, Asia Minor, showing the Ionic form of capital. (From Hdbch.—Griechen.)

volutes (see Fig. 146). The primordial type is not found in any building of Europe, but occurs in several detached fragments. Another type appears very early, with the surface of one pair of volutes taken out of plane, warped and twisted, as explained below (see Fig. 156).

In Asia Minor are, first, some rock tombs of which the outer faces, carved in the smoothed face of cliffs, are rather numerous in many parts of Lycia. Fig. 147 shows one of these tombs. There is no mistaking the Ionic form of the capital. Moreover, it is at least worthy of consideration—the possibility that this form of capital came naturally of relief sculpture, where the whole background had to be lowered or cut away, leaving an engaged column, and a block at the

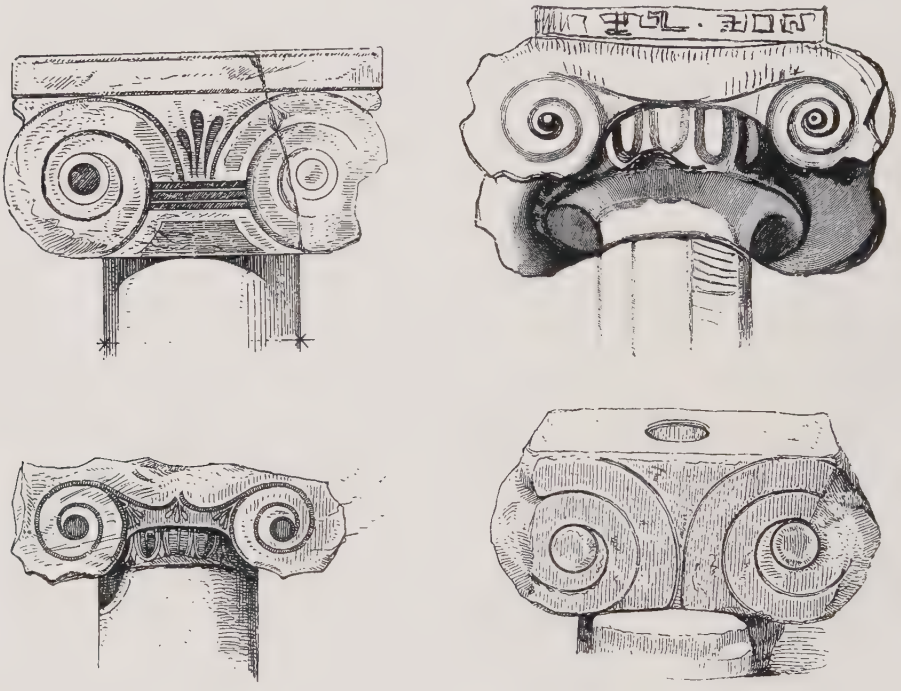
top of it in which it was necessary to work some ornament. A Doric form, the echinus and nothing else, would not be very effective in such a case, and this arrangement of two scrolls might easily have suggested itself. This view is confirmed by such scrolls as that shown in Fig. 148, where the upright is not carried so far as to be an engaged column and where, accordingly, the apparent lintel above terminates in a volute at each end.

On the other hand, Fig. 149 gives several capitals which have been found at Athens, two of them at least on the top of the Acropolis rock. It is not known from what buildings they may have come, but the interesting thing is that the scrolls are so evidently the result of rude ornamental carving upon a solid block which, by the natural instinct of the builders, is cut longer than square, so that in actual building the unsupported stretch of the stone between it and the next columns would be diminished by the corbel-like projection of each

148—Scrolls, suggesting possible origin of the volutes in the Ionic capital; tomb at Limyra, Asia Minor. (From P. and von L.)

wing of this block. This character of the proto-Ionic capital is marked in the form shown in Fig. 150, on which both elevation and plan are shown, and which is seen to have a length of nearly 4 feet 6 inches, with a width, corresponding to the shaft of the column, of only 1 foot 6 inches. Writers on this important question, the history of the Ionic capital, often speak of the vegetable origin of this design; and, indeed,

every student of ornament with his eye on natural forms will have seen spiral scrolls at the ends of tendrils, and of uncurling ferns, and will have studied them. At the same time the obvious disposition of the primitive human mind to make forms which it approves, whether by mere notching of an edge or of scoring a flat surface, would sug-

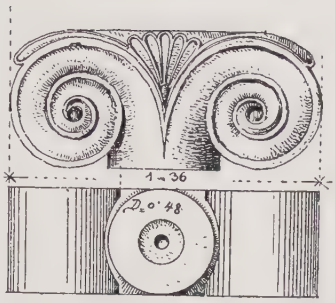


149—Primitive Ionic capitals, from museums at Athens. (From Hdbch.—Griechen.)

gest some such way of treating these wings or projections, if such adornment be desired for purposes of construction or of decorative effect. In this connection, too, and as showing what the tendencies are in a purely decorative way, the much later capital shown in Fig. 151 may be studied. The bullheads carry no weight, nor do the volutes; the top of the capital proper, as marked by the abacus seen in slight relief at the top of the cut, is probably of the same width each way, and yet the old feeling for the extended form—for a projection along the line of the front and into the intercolumniation—has produced this unique form of capital: a design evidently too grotesque to endure in a Grecian style.

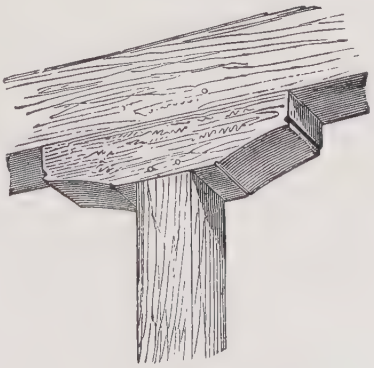
The favourite reference of forms in early stone building to still earlier building in wood is found once more in these theories about

the origin of the Ionic style. As it is easy, when a wooden post carries wooden girders or lintels, to diminish the unsupported stretch of those girders by putting in a short horizontal piece of heavy timber laid in the same direction as the longer piece above, and as this short piece may be shaped as shown in Fig. 152 or supported by diagonal braces or otherwise, and may in this way be very stiff and capable of resisting an enormous pressure, thus greatly assisting the supporting power of the long girders, what can be more natural than to carve the end of this short piece into scrolls, and even into bullheads when there is some command of sculptured forms? It has even been suggested that the volutes of Ionic capitals are reminiscences of shavings not cut wholly from the upright piece, but curled nearly as such shavings would curl naturally on either side. A few blows with the adze and a few minutes of careful arrangement would bring about this adornment in a perishable material and for a short time. The prevalence of a form of capital projecting on either side in the direction of the length of the epistyle, and therefore much longer than square, is not to be ignored, and it tells in the direction of this theory of a derivation from wooden building. The scroll is in itself but a trivial ornament, and students of decoration in Greek and other styles have often commented on its poverty. Its permanent retention as an ornamental feature then can only be accounted



150—Proto-Ionic capital found at Messa, in the island of Lesbos. (From Hdbch.—Griechen.)

151—Bull-head capital found at Ephesus. (From Hdbch.—Griechen.)



152—The natural use of timber in trabeated construction. (From V.-le-D. Entretiens.)

for by a strongly felt tradition. This tradition may be connected with the primitive wooden building of Western Asia, for in all the lands of Asia Minor and northern Syria, where forests still exist, it is as common to-day as it was thirty centuries ago to support the heavy

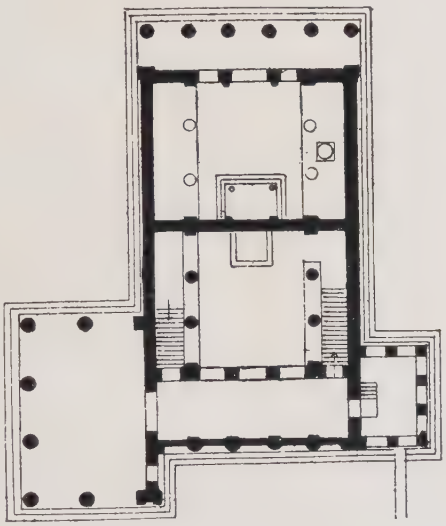
153—Tomb-front at Amyntas, Asia Minor. The whole façade cut in the living rock. (From Benndorf and Niemann.)

mud roofs by posts or pillars made of trunks of trees with perhaps the stumps of their branches cut so as to act as braces or to extend the surface of support.

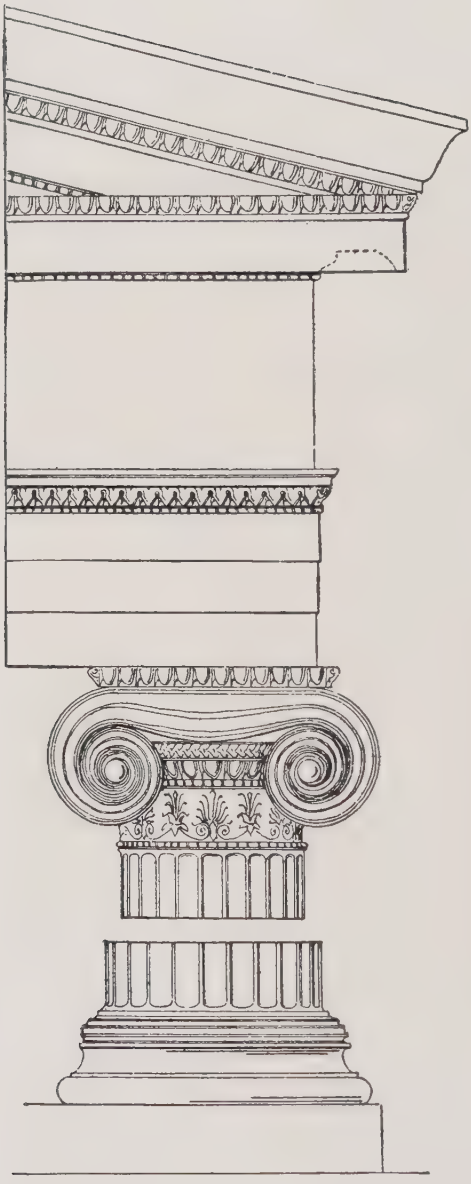
A similar rock-cut form to that shown in Fig. 147 is found in some of the rock-cut tombs of Asia Minor. Thus there are three such tombs at Amyntas, one of which is shown in Fig. 153. The whole portico in antis was reserved, when the native rock was cut away above and

within it, and in one of the tombs the left-hand column is broken off in the middle of the shaft, so that the upper part hangs down from the entablature "like a stalactite," as stated in Benndorf and Niemann's text. It is not asserted that these rock-cut tombs are themselves of the primitive epoch; but they seem to point to an Asiatic origin of this capital with its very abnormal scheme.

It is probable that a full examination, with comparison of dates, if that were possible, would reveal a close connection between the Doric and Ionic styles as existing to even a late period. Thus the tomb of Theron, so called, at Girgenti in Sicily, of a late pre-Roman epoch, has Ionic capitals at the four corners and a Doric entablature resting upon these. A similar mixture was found in the small temple at Selinus, which was called by Hittorff the temple of Empedocles. In these small monuments, and especially in the countries not included in Greece proper, the marked character of the Doric entablature with its frieze of triglyphs was greatly in favour, and, indeed, was hardly abandoned except for the purpose of affording a continuous band of sculpture, an "Ionic frieze," as described above in connection with the Theseion of Athens. Then, when the building was to be approached from one side only, as in a prostyle portico with columns in antis, and when the capital was to be set flat-wise against a wall behind it, the Doric capital would evidently be an awkward feature, or at least one devoid of charm, whereas the volutes of the Ionic capital were well set off by the background of walling and of shadow. The strange thing is that this same capital with its abnormal characteristics and its appearance as if the superincumbent weight had forced a soft material outward, thus producing the volute—that this capital should have gained favour when needed for a free colonnade, visible from every side, and should have held its own for so many centuries among the art-loving Greeks of Western Asia.



154—Plan of the Erechtheion, Athens. (From Eu. A.)



155—Order of north portico of Erechtheion. (From Eu. A.)

Of the perfected Ionic style we have not one building so nearly complete that it can be judged as a whole, except the small temple on the Acropolis known as the Erechtheion, which itself is much ruined. This temple, of which the plan is given in Fig. 154, stands on a point of rock so irregular in its surface that the building has readily taken three different levels of floor. The hall or naos, with its hexastyle portico facing the east, seems to have been entirely cut off by a cross wall from the larger and lower hall, with a kind of peristyle indicated in the middle, from which stairs descended outside at the west end, where the ground was much lower than any part of the pavement of the temple. The north portico, tetrastyle, with two columns on the return, is on a level with the western naos; and also nearly on a level with it is the precious "Portico of the Maidens," the caryatid porch[28] facing the south. To whom were dedicated the separate parts of the building is not known. It is thought that Erechtheus, a very early hero and demigod, and Athena, the protecting

[28] Caryatid Porch: also called the Porch of the Arrephoroi, that is, the maidens who carried the dedicated gifts to Athene; but those were children between seven and eleven years of age, and there is no probability that those much-honoured maidens would be represented as supporting a building. The term caryatid is asserted to have reference to certain female captives from Caryæ; and it carries with it the idea of servitude. These figures could not be the honorary statues of maidens who had been Arrephoroi.

goddess of Athens, in some one of her manifestations (perhaps as Athena Polias), and also Pandrosos, a nymph and a daughter of Cecrops (Ke-

156—North porch of Erechtheion. (From photo.)

krops), the mythical founder of Athens, were each honoured by the dedication of a shrine in this building; but which part belongs to which divinity is not clear to any one. The wall at the extreme western end of

the main building, which stood until 1852 and which then fell in a storm, was probably of Roman time. It is shown in the great work of Stuart and Revett as having windows and engaged columns.[29] It is probable that there was formerly an open portico at the west end with columns, where that Roman wall stood afterward. The different Ionic orders of the Erechtheion are extremely beautiful. That of the northern portico of four columns is shown in Fig. 155. A view of this portico

157—Erechtheion from south-east, showing hexastyle portico and Portico of the Maidens. (From photo.)

is given in Fig. 156, and one of the never quite finished hexastyle portico to the east in Fig. 157, and in spite of the injuries they have received, their design, particularly that of the north portico, is seen to be extremely elaborate and yet graceful, tranquil, reserved in curvature and in projection. The rich and varied character of the carving was greatly enhanced by painting, for vestiges of colour were very visible upon these capitals, even in the time of persons now living, and it is evident that the scroll form was emphasized by painting of deep

[29] In April, 1906, it was reported that a proposed restoration of the Erechtheion would include the rebuilding of this wall.

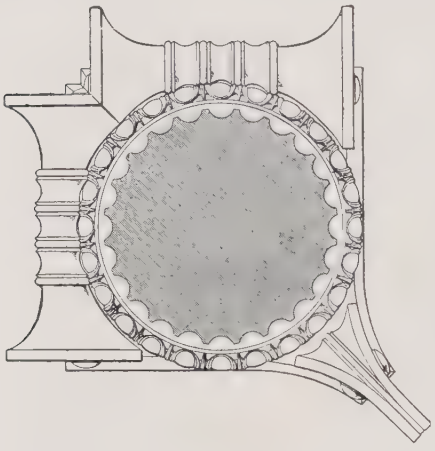
red in the recessed parts, while the projecting ridges remained in the yellow of the plain marble as coloured by encaustic finish, and certain lines of blue and gilt (perhaps applied by bands of gilded bronze) were also arranged with the scrolls. The anthemion [30] band was also painted with a background of vermilion, while the echinus with the egg-and-dart moulding above had a blue ground with gilded ovoid ornaments.

The shafts are of extreme refinement, and more slender than those of the Doric order, and fluted instead of channelled, there being twenty-four flutes in each shaft. The entasis is much less marked than in the Doric style, as befits the greater slenderness of the shafts. The elaborate moulded base, having considerable projection, in itself does away with much of the necessity of that strongly marked taper which the Doric shaft receives. The entablature, with its architraves divided into three surfaces, each one stepped out a half inch or so from the one next below; the frieze, simple and unbroken by anything except the sculptured forms upon it, and the highly wrought cornice above, are all essential parts of the Ionic style. And each building or detail of this style has to be remade by the imagination, if we wish to judge it as a complete thing, for, as said above, this ruined and half-understood Erechtheion is by far the most nearly complete of all the Ionic temples of the Grecian world.

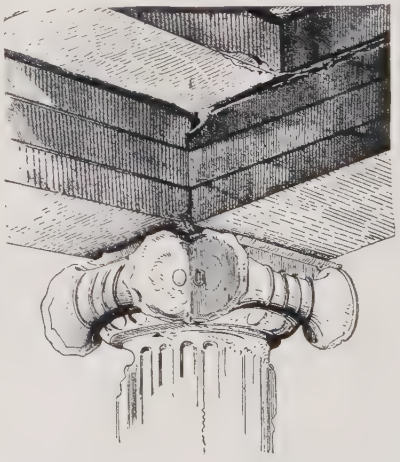
As the Erechtheion is also as beautiful in its details as the most perfect Ionic buildings, we may study the style in connection with it. The slender shaft tapers very slightly; that is to say, it spreads but little at the foot beyond its diameter at the top of the shaft. This peculiarity is closely connected with the use of the spreading base; and, as will be seen below, the further need of a broad footing is met by the use of a plinth below the base, and either square or polygonal in plan. The shaft is fluted, the number of flutes being commonly twenty. The capital most commonly used is as described above and shown in Figs. 146, 155, 156, but the difficulty of turning the corner of an Ionic peristyle was felt, and the device shown in Fig. 158 was introduced in the Erechtheion. This plan, if compared with Figs. 146–150, shows how the architects who were accustomed to a capital with two decided pro-

[30] Anthemion: a flat ornament resembling or suggested by a cluster of cut flowers, branches, blossoms, sprays, or the like, the stems being gathered together at the bottom and separating as they ascend. The most elaborate anthemions in art are those in Persian designs of painted tiles and the like, but the most often cited are the "honeysuckle ornaments" of Greek sculpture; and these are apparently studies of blossoms of one plant, or even of one and the same spray.

jections along the epistyle on its under side, brought themselves to work those projections on two adjoining faces instead of two opposite faces. Then, the look of the flat side, as shown in Fig. 155, had to be obtained in the best way practicable by bringing the two adjacent scrolls into one diagonal spur. The left-hand capital in Fig. 156 is a capital of this sort and the twist in its plan can be made out. Such a capital is seen from within the portico in Fig. 159. The two bolsters, or cushions, are seen to meet and coalesce, with an ugly angle between them; but there were no other practicable means of getting the desired result of two outer faces with two scrolls in each face.[31] Fig. 160 is a drawing made to scale and put into mathematical perspective, showing the ordinary capital and the corner capital in a building of refined early Ionic style, except that the sculpture of the necking of the capital (the anthemion band) and that of the frieze, the cornice, etc., are omitted for the sake of clearness.



158—Plan of Ionic capital for column at corner of peristyle. (From Eu. A.)

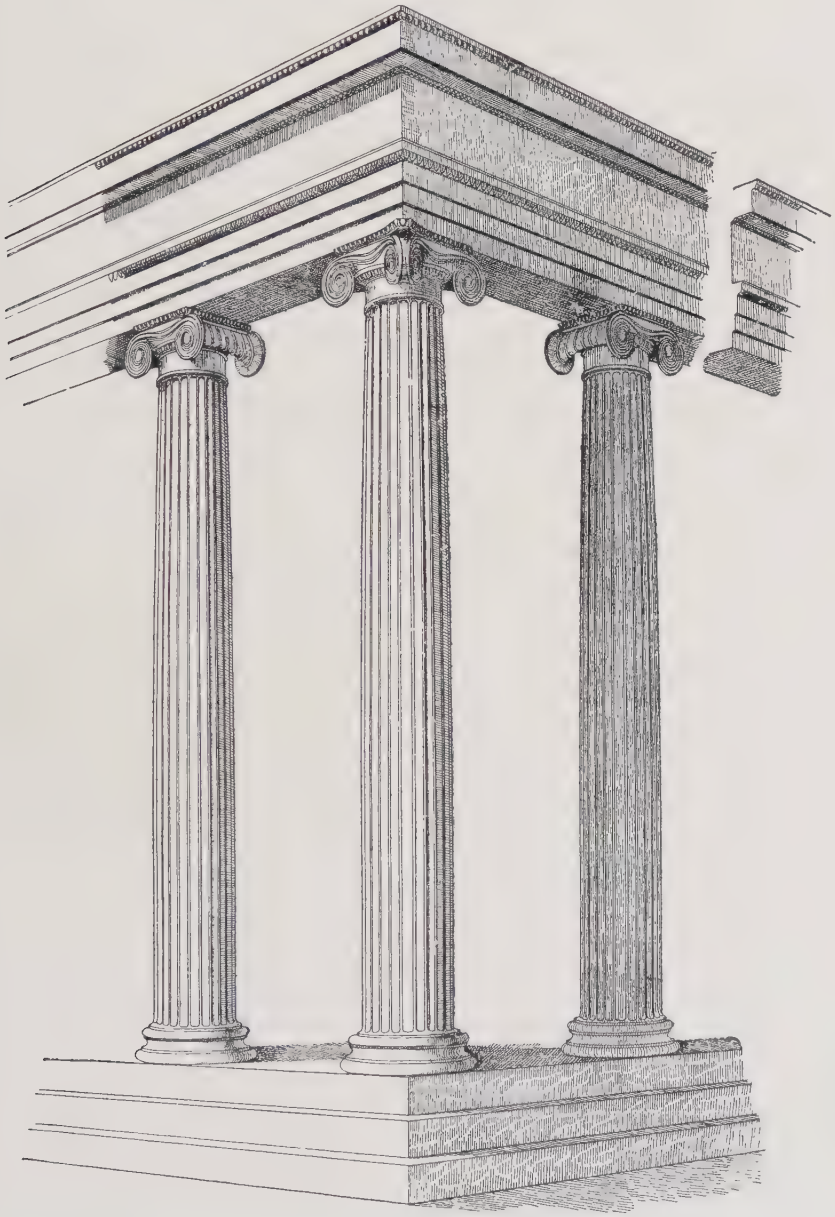


159—View of Ionic capital at corner, temple of Athena Nike. (From Hdbch.—Griechen.)

Along the south-western shores of Asia Minor there stood the most magnificent temples of this style; and, first, that near Miletos, and often called after that city; very famous in story as the largest in Asia Minor, and as containing within its walls the seat of the celebrated

[31] Stuart and Revett (Antiquities of Athens, Vol. I, 1762) give measured drawings of the small temple on the Ilissos, which has been wholly destroyed since their visit to Athens. They show corner capitals of plan closely resembling that given in Fig. 158, and, on a large scale, and restored, the same view from within which is given in Fig. 159.

Oracle of Apollo, the most important oracle known to the Greeks after that at Delphi. This is the great building known as the temple of Apollo Didumeos or Didumaios, and sometimes, in English, the Didymean Apollo. We are told by Strabo (Geog. bk. xiv) that be-



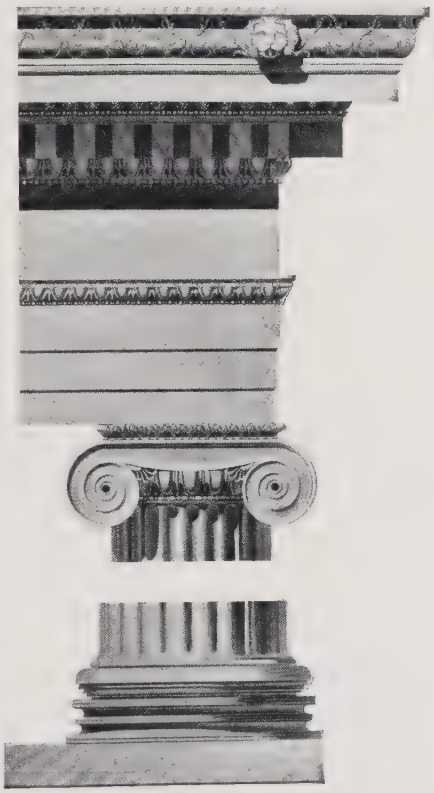
160—View of corner of Ionic peristyle: the east portico of Erechtheion, the sculpture omitted. Drawn by D. N. B. S. (From Eu. A.)

cause of its enormous size the builders never succeeded in roofing it: and Pausanius (vii, 5) says that it was not finished. The ruins are about six miles south of the modern Palattia. Its dimensions, according to the most accurate measurements obtainable, are 170 feet in width, measuring to the top step of the stereobate, and about 365 feet in length. The Parthenon is only two-thirds as wide and as long. Indeed, the only Doric temple that at all compares with this in size is Temple G at Selinunte, which was to have been two or three feet wider. The building was decastyle and dipteral, with twenty-one columns on each flank, and had therefore 108 columns in its double peristyle, without counting those of the pronaos and epinaos (if any), nor those within the naos. The scale of the whole thing was enormous, for the measurements on the stylobate show an intercolumniation of 17 feet 4 inches from centre to centre of the shafts. The naos itself, estimated by so much of the wall as is left standing, was 97 feet by 290 feet, and from this and from the vestiges of the pavement of the porticos, a width of 170 feet 9 inches and a length of 366 feet 6 inches are assumed for the whole space within the top step of the stylobate. Several of the bases of the columns are in perfect condition, and they have the unusual feature of a polygonal plinth or block, with vertical sides, beneath the circular moulded base. Moreover, in the specimen preserved in the Louvre, each face of this polygon is carved with figures in relief upon a sunken panel.

This use of a plinth is not uncommon in the larger buildings of the Ionic order. The distinction is marked between the comparatively thick Doric shaft, much larger at the base than at the necking, and the Ionic column, which tapers very slightly and is very slender. In this very Temple of Miletos the shaft is only 6 feet 4 inches thick at the base while estimated as 63 feet in height, and, while the moulded base partly made up for this, as stated above, it was almost a matter of course that there should be interposed, between that immense downward pressure and the stylobate, some plate of carefully chosen material which would distribute this load. This plate would naturally be made larger horizontally than the moulded base. Accordingly there is given to these columns, beneath the base, a square plinth which, however, may have its nearly useless corners taken off, producing an octagon, as is seen in Miletos. This temple of Apollo Didymæos exists only in its ground-plan: and even this is so far a puzzle that the explorers found the whole naos unfloored—sunk sixteen feet below

the stereobate, with the pilasters along the walls raised on a high continuous stylobate. We are reminded of the laurel trees which Strabo says grew within the temple. The pilasters, too, are very unusual in Greek buildings: and here the question of a suitable capital for a pilaster was first, perhaps, answered. (See Fig 169.)

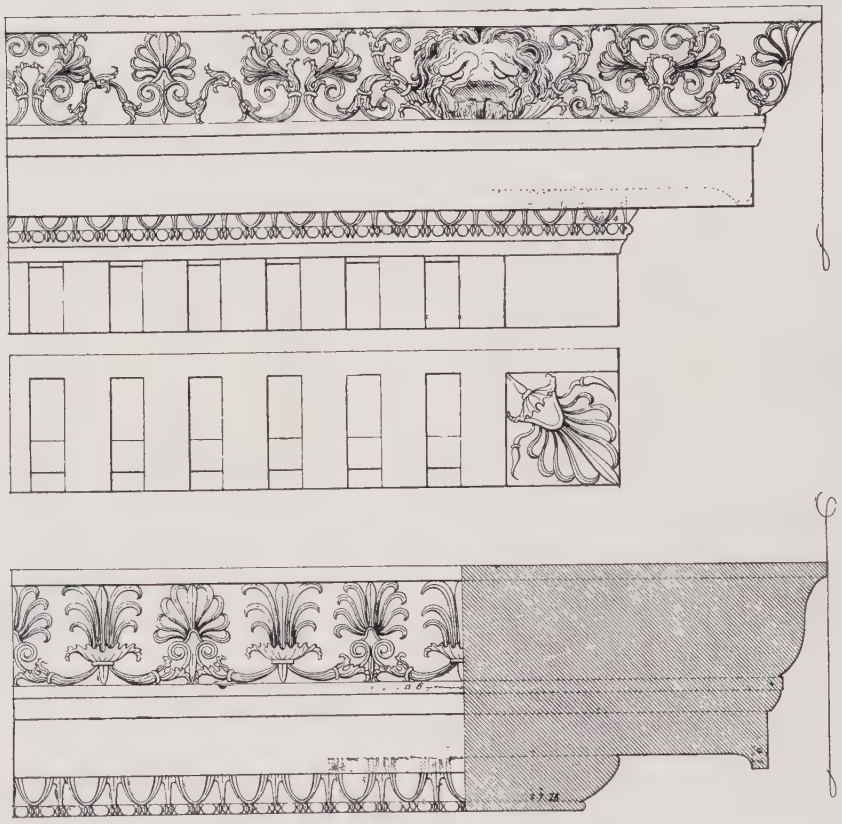
The temple of Teos, not far to the northward, was very large, with eight columns on the front (for the octostyle form is not so uncommon in these great Ionic temples of Asia Minor), and its columns, assumed as 26 feet high, have a taper so slight that the measurements given are 3 feet 4 inches in diameter at the base and 3 feet 1 inch at the necking. The building, however, is completely ruined, and has never been thoroughly studied. The best plates of it are still those of the Society of the Dilettanti (1821).



161.—Order of great temple of Priene, in Caria, Asia Minor: called Temple of Athena Polias. (From Antiq. of Ionia, Vol. I.)

The temple of Priene, ten or twelve miles north of Miletos, has shafts with a much more pronounced taper than those of the Ionic style generally. The measurements of Gandy and Bedford, made for the Dilettanti Society, are 4 feet 8 inches and a fraction for the diameter of the lowermost drum, and 3 feet 6 inches and a fraction for the diameter just below the capital. The fragments of this temple, though there are nothing but fragments on the site, are better preserved than those of some other of these ruined structures, and the very elaborate carving of the entablature is of interest. Fig. 161 gives a detail of the order, showing the elaborate egg-and-dart mouldings, repeated in each case by what we call a bead-and-reel moulding, and the cyma recta of the horizontal cornice of the flank, sculptured with anthemions and scrolls in the richest way. Fig. 162 gives

in contrast that cornice, in outline, and a piece of the raking cornice of the pediment, and the makers of these drawings state that "lest this singularity should give reason to suspect an error . . . it is to be noted that the measures of these two cornices were taken from the angular stone of the pediment." That is to say, the upper figure



162—Cornices of the great temple of Priene in Asia Minor. Above, elevation and plan of side cornice with water-spout; below, elevation and section of cornice of pediment. (From Antiq. of Ionia, Vol. I.)

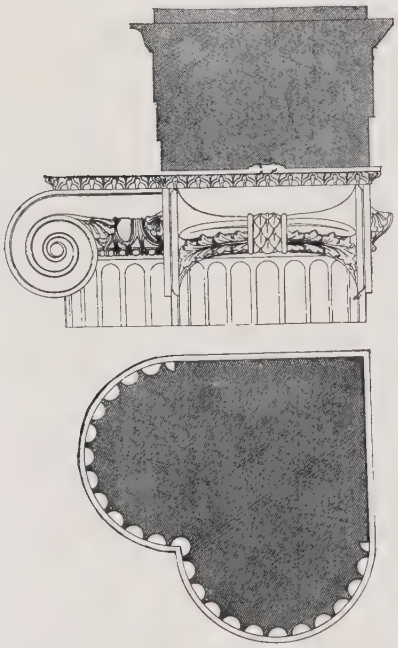
is drawn from one side of such a stone at the angle of the temple, and the lower figure from the other side of the same stone. This is the fashion in which the Alexandrine architects sculptured their buildings, and there is seen in this and other fragments of architectural sculpture of the times a certain inability of the Greek mind to produce what we call architectural sculpture. The extreme severity of the laws which controlled the Doric builders may surprise us, but its results are noble, and every designer feels sympathy with the doctrine

that one designs best in fetters—severe limitations. But in the matter of sculpture the case is very different, and the inexplicable thing is that the Greeks, who were the greatest of all sculptors of the human form, should have cared so little for the sculpture of adornment, even when such decorative work could be based upon the close observation of nature. The plan of the temple at Priene is given by Gandy and Bedford and shows a not very large structure, 64 feet wide and 122 feet long measured at the top step of the stylobate. The building was hexastyle with eleven columns on the sides and is thought to have had a pronaos and epinaos, though this is confessedly uncertain.

At Aphrodisias the ancient temple of Aphrodite, rebuilt more than once, then made into a church and not now perfectly understood as to its plan and general scheme, yet remains in better condition as to its details than most of the Greek buildings in Asia Minor. There is some reason for thinking that its date is very late; this in the capital explains sufficiently a certain loss of charm in the reduction to a flat, horizontal band of that fillet which connects the two volutes on the same side. In the columns of the Erechtheion and in others of Athenian origin this straight band does not appear; it seems here to be an inferior substitution for the beautiful drooping band, like a festoon, which, indeed, is for some of us the most attractive part of the Ionic capital. On the other hand, the great enlargement, in the Aphrodisias capital, of the echinus moulding with its egg-and-dart decoration is a step toward the intelligent combination of capital with shaft. In Fig. 163 there is also to be seen the very severe and admirable base of the columns of this temple. Its plinth is very small and low—there is a small round moulding just above the upper torus, but otherwise the base is very nearly of the central and most approved form—that which we call the "Attic base." The scale of the temple is not

163.—Order of temple of Aphrodite at Aphrodisias. (From Antiq. of Ionia, Vol. I.)

unusual, the stereobate being only 119 feet long; but this temple occupied the middle point of a great colonnaded enclosure, and this structure also was of the Ionic style and evidently a magnificent specimen of this late epoch. Near at hand was the still larger enclosure with the vestiges of an unmatched colonnade; an outer peristyle of about 200 Ionic columns and a double portico within, the interior dimensions of which are given by Gandy and Bedford as 213 by 525 feet approximately. This great building, called the Agora, seems to have enclosed a structure, perhaps a basilica, which is entirely ruined, so that we have no means of judging of its epoch. The colonnade itself is the important thing, and in Fig. 164 there is given one of its curious corner piers, showing a remarkable attempt to solve that inherent difficulty of the Ionic style, the capital with distinct sides and ends, when put to other service than the support of the unbroken epistyle.



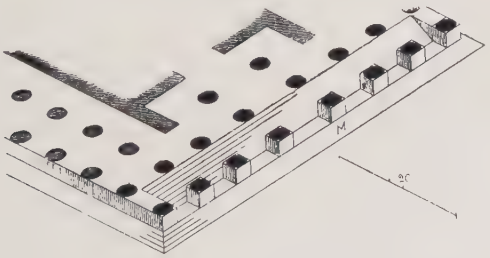
164—Corner pier of Ionic colonnade: the Agora of Aphrodisias. (From Ant. of Io., Vol. III.)

At Magnesia in Asia Minor, called *Magnesia ad Mæandrum*, was an Ionic temple standing in the middle of a great peribolos, and octostyle. The naos, of which but little remains, was of a familiar kind, with a porch in antis at each end. Recent examination shows that it would not be difficult to restore in imagination the architecture of this great structure, for the pile of architectural fragments has not been plundered seriously, and specimens of all parts of the detail are on the spot.

The Artemision at Ephesus differs from all other known temples in having sculptured drums included in the shafts of some of its columns. According to the discoveries of John T. Wood,[32] it was not, as ancient writers had asserted, the columns of the pronaos and of the

[32] John Turtle Wood worked upon the site from 1869 to 1874, having first located it at some distance from the city proper. See his Discoveries at Ephesus, 1876.

epinaos—but rather those of the outer row of the east and west fronts—which were adorned in this way. The sculptures had been saved from ruin by the soft clay deposited in repeated floods of the river Kaüstros (Caÿster). The temple was raised on a high plateau with many (fourteen?) steps leading up to a stereobate of very great size, octostyle dipteral, with twenty columns on each side. A drum rather higher than wide and so high that the human figures in relief upon it were of about life size, was set immediately upon the moulded base, and above that rose the fluted shaft. The restorations generally offered show a shaft fully proportioned, and of full height, apart from this unique adornment of the lower drum (see Fig. 165); but the exact height of the columns is not positively ascertained.[33] Another very bold assertion is made with regard to this temple, viz., that its columns in the two fronts stood upon square



166—Conjectural restoration, portico and pedestals of Artemision at Ephesus. (From Choisy, Histoire, following Dr. A. S. Murray.)

pedestals of three or four feet in height, which were inserted in order to give them the same level for their bases as was given to the columns of the continuous stylobate. Fig. 166 shows how this is conceived by a competent constructor who is not

165—Column from Artemision at Ephesus, showing sculptured drum. Conjectural restoration. (From Collignon.)

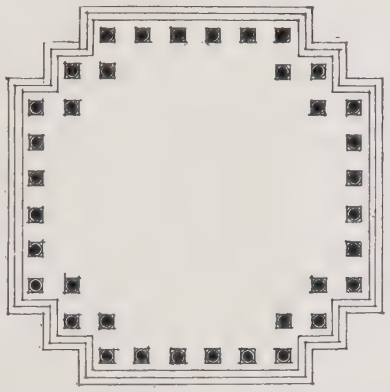
[33] Mr. Wood himself preferred a scheme by which each column of the East and West fronts had three sculptured drums occupying together nearly half the height of the shaft, which shaft was then fluted from the sculptured part to the capital. He gives drawings of both proposed systems, and in his south elevation and perspective view treats one end of the temple in each of the two ways.

himself the author of the theory, with regard to these pedestals. Mr. Choisy gives the credit for the conception to A. S. Murray, of the British Museum, but his own indorsement gives it new value.

167—Sculptured drum of shaft of Artemision at Ephesus. Now in the British Museum. (From Rayet.)

The side colonnades rise not from the top step of a continuous flight of steps, but from a low podium—so that the columns of the east front may have the same horizontal line of base, while the steps of the approach may be partly under the shelter where these almost

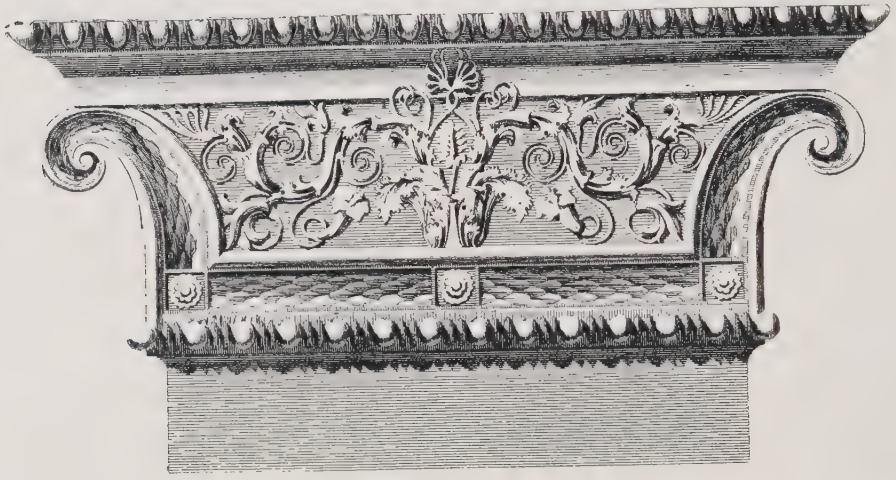
cubical pedestals are set up. This is not quite accepted as the positive historical truth of that portico, but Mr. Collignon's restoration (shown in Fig. 165) accepts it. The lower cubical mass with contending figures is the supposed pedestal, and the group of figures in repose adorns the lowermost cylindrical drum of the shaft above. Fig. 167 shows the same group of figures turned, as it were, a little to the left so that a magnificent Hermes comes into the extreme foreground, and the draped goddess, hardly seen in Fig. 165, is fully shown at the right. It will be noted that Mr. Collignon's woodcut shows the other female figure, that at the left (or at the right hand of Hermes) as much restored, the head and left hand replaced.



168—Diagram of plan of the Mausoleum at Halicarnassus, according to the conjectural reconstruction of Mr. Oldfield.

This exceptional decoration in which the Grecian use of the human figure is the only elaborate adornment of a building leads us to the consideration of other buildings of even greater novelty of conception, and at least equally rich in relief sculpture. Such a building of Asia Minor is of nearly the same date as the Apollo temple at Miletos. This is the famous Mausoleum at Halicarnassus, now Boudrum, in Caria, at the southern extremity of the west coast. This building, celebrated through all antiquity, is known to have stood nearly complete until 1552 A.D., when the Knights of St. John, who had their central fortress in the Island of Rhodes, destroyed it for the purpose of using its material in building a castle. The ruins remained unnoticed until the visit of Charles Thomas Newton (afterward Sir Charles) about 1855–56. Since the removal to the British Museum of the principal sculptures which remain, many attempts have been made to restore, in drawings and models, and in close obedience to the description in Pliny's "Natural History" (xxxvi, 30), the original design of the building. The wide discrepancy between these studies points to the incompleteness of our knowledge and the impossibility of understanding the building as it really was. Pliny's description gives, indeed, many details, and Sir Charles Newton was guided in his explorations by the most sincere and intelligent wish to preserve everything

found—to note every incident which the ruins afforded; but, as has been pointed out by Prof. Percy Gardner,[34] the originality of the design and its radical differences from those of any building



known to us, prevent the making of a scheme which shall satisfy all requirements. Pliny tells us merely that there were on each face ten Ionic columns, and that there was a great deal of sculpture on all parts, while upon the top there was a chariot (quadriga) with statues of Mausolus and his queen. A plan by Mr. Pullan was made soon after the first discoveries and was accepted by Sir Charles Newton. The much more elaborate one offered by Mr. Oldfield, about 1895, has at least the merit of including all the sculpture found on the spot, and also of meeting the line of Martial,[35] in which the mausoleum is spoken of as hanging in the air. This is thought, very sensibly, to point to a structure of which the upper part, presumably heavy, with a generally pyramidal roof rising from a nearly

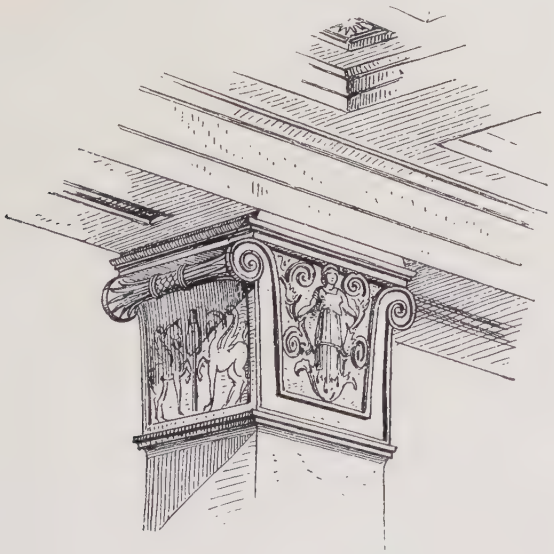
169—Capital of interior pilaster, great temple of Miletos, Asia Minor. (From Antiq. of Ionia, Vol. I.)

[34] Sculptured Tombs of Hellas, London, 1896.

[35] Aere uacuo pendentia mausolea, *Epigram I.*

square entablature, and which carried a colossal group of statuary, both men and horses, was all supported (as Pliny says) by thirty-six columns. The whole building, given by Pliny as 140 Roman feet high, may also be nearly fixed as to the size of its plan by the size of the bases of the drums of the columns, supposing always that Pliny's figure (36) is to be accepted. The main difference among the five or six designs which have been offered is that in some of them (as that by Mr. Pullan) the plan is shown as a simple rectangle, whereas Mr. Oldfield breaks his plan up into a Greek cross with projecting masses between the arms of the cross, as in the diagram, Fig. 168. Pliny's measurement "*toto circumitio pedes CCCCXI*" (in the whole outline 411 feet) in connection with his statement about the number of the columns, is the purpose of this breaking up of the perimeter.

The peculiarity in the Ionic column, that it extends itself sidewise in the direction of the epistyle, is repeated in the antæ, in the square piers, and in those pilasters which show themselves first in the temple of Apollo Didymæos in Miletos. These pilasters at Miletos are shown in Fig. 169; and Fig. 170 gives a slight sketch in perspective of a pier at Priene in the curious propylaia arranged in three naves divided by these square pillars. They are about 2 feet in smallest diameter and 5 feet apart in one direction, 3 feet in the other. As there are only six of them the interior of the propylaia was very small; it is shown in Vol. I of the Antiquities of Ionia, chap. ii, plates 11–17.

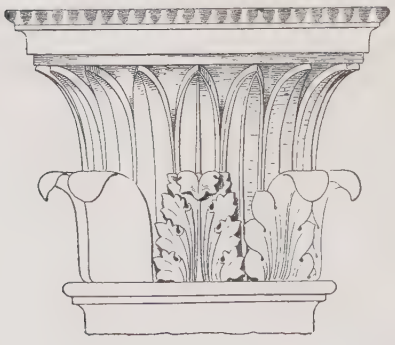


170—Capital of pier of propylaia at Priene. (From Hdbch.—Griechen.)

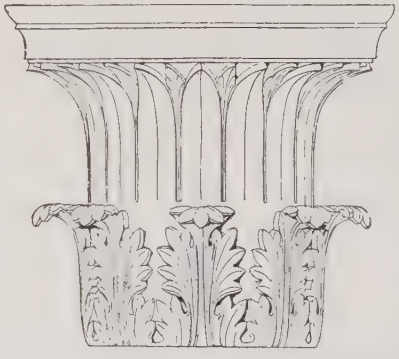
CHAPTER VIII

THE CORINTHIAN STYLE

THE Corinthian would appear but a modification of the Ionic style, but for the capital itself. This single feature, much the most remarkable invention of the Greeks in the way of architectural sculpture, has a certain relation to the Campaniform capital used by the Egyptians (see Book I). The principle is the same, once we accept the modification involved in replacing painted ornamentation by carved leafage. And this step is not so extraordinary nor unfamiliar in the development of architectural art; in all epochs, as society has increased in refinement, and the arts in elaboration, there is that marked tendency to abandon smooth surfaces treated in colour for surfaces deeply incised or wrought into ornamentation in relief. So that the earliest Corinthian capitals, or those which seem



171—Early Corinthian capital, elevation by Boetticher. (From Eu. A.)



172—Early Corinthian capital, elevation by Boetticher. (From Eu. A.)

to be the earliest, are simple bells, upon the upper part of which the long, thin leaves, clinging closely to the surface, are very like the work of the painter, while the ring of more elaborate leafage at the neck of the capital has the immediate suggestion of the acanthus leaf, which grew freely among the rocks of Attica. Figs. 171 and 172 give two of these

early Corinthian capitals; and the system adopted is well explained by these drawings in elevation. The character of the sculpture is shown in Fig. 173, where two capitals, one of them probably the same which is shown in Fig. 171, are given as they stood twenty-five years ago in the

173—Two capitals of early Corinthian style, found in Theatre of Dionysos at Athens. (From photo.)

open spaces of the Theatre of Bacchus at Athens. These capitals are not to be taken as of the Corinthian style in its completeness. They are proto-Corinthian in a sense, or more accurately, they are instances of a generally lost and forgotten tendency to seek for a design which would correspond with the slender forms, the fluted shafts and elaborate bases of the Ionic style, and yet provide a capital alike on all four sides of the abacus, and free from the objection of the Ionic capital—that it could not be applied to a corner.

This theory of a slow development of the Corinthian capital by

itself and as a modification of the Ionic style, is confirmed by the frequent appearance of Corinthian columns in subservient parts, and acting as interior ornamentation for a building generally Doric or Ionic in style. Thus, in the great temple at Bassai near Phigaleia in Peloponnessus, and in the vast temple of Apollo at Miletos, in Asia Minor, the curious subdivisions of the naos are treated with Corinthian capitals on half columns and engaged columns. In the Philippeion in Olympia, a circular building had Corinthian pillars within and Ionic columns without, and the once magnificent tholos at Epidauros was treated with a complete ring—a highly elaborated order—of Corinthian style, for the interior, while the exterior remained Doric of pure type. The Arsinoeion at Samothrace and the temple of Athena Alea at Tegea in Asia Minor have a similar subordinate use of the Corinthian decoration.

The use of the Corinthian capital cannot be thought to have become general before the time of Alexander the Great. It was undoubtedly under his successors, the kings of Antioch and Seleucia, that the order became important enough to be the sole motive of the design of the complete building; for, as for the Greek dynasty in Egypt, the overmastering dignity of the indigenous architecture of the land prevented any great extension of Greek designing there. The temple on the Acropolis at Pergamon is probably of Roman Imperial origin, and yet both with this and with the great temple of the Olympian Zeus at Athens, there are several good reasons for the supposition that Greek designers had created a Corinthian temple before the time, in the one case of Trajan, in the other of his successor Hadrian. This question will probably be settled by future research and exploration, but in the meantime it is noticeable that many trustworthy students regard at least the Athenian temple as wholly Greek in its design and construction, and as showing, in its details, an earlier date and a more refined handling than is found in the art of the second century A.D.

In Europe there is so very little of the Greek Corinthian style in existence that the order has been thought, sometimes, a wholly Asiatic creation; but the discovery of the Corinthian work in the tholos at Epidauros has changed that point of view to a great extent. It is true that the little round monument known as the Choragic Monument of Lysikrates (see Fig. 174), built about 334 B.C., is entirely Corinthian, and has the elaborate and somewhat non-Greek style of its design carried out even in the roof, with its florid pinnacle and the scrolls

which once adorned it. We are accustomed, however, to find so small a building, and one so costly in proportion to its size, studied in a different way from the great edifices around. The columns are engaged; relieved upon a continuous wall of circular plan. Moreover, in the Lysikrates Monument, the capital is far from being a perfected design; the lower ring of acanthus leaves hardly unites with the upper part of the bell in a faultless way. At Epidauros, however, all signs of an imperfect development have disappeared. It is customary to date that building at 310 B.C., and this date, thirteen years after the death of Alexander the Great, is a good one to fix in the mind as the time of the completed Corinthian style.

174—Choragic Monument of Lysikrates at Athens. The top of the monument originally bore a tripod, the prize won in the choral contest. (From photo.)

A carefully worked but unfinished capital was found at Epidauros, in a chamber specially prepared for it, protected in a very complete way; so that it seems evident that it was a model to which the sculptors of the working capitals of the tholos were to conform. The leafage of the great divisions differs,—it is more minute in its subdivisions in one place, bolder in another,—all as if experiments were in order. The rough condition of its abacus tends to confirm this view: for the mouldings of that member needed no elaborate model for their accuracy. This capital is now in the Central Museum at Athens, and it is so beautiful in itself and so

important in the history of art that it is shown here in two aspects (Figs. 175 and 176). Its extreme simplicity is noticeable. The bell itself is displayed without any sense of a supposed necessity of crowding it with the acanthus leaves. A comparison with a Roman Corinthian capital, like some of those shown in Book V, will explain this fully. Then, too, the acanthus leaves cover only the lower part

175—Capital intended for the tholos at Epidauros, in Athens Museum. (From photo.)

of the bell, and the long and heavy scrolls of the upper part, if they suggest vegetation at all, are studied from plants of a different class. The large blossom in the middle of each face at top, and the smaller bells which hang beneath the volutes of the corners, may be thought to carry realistic study of nature too far; but they are well subdued to the necessities of decoration.

There are several cases in which a Corinthian capital is worked upon the face of a pier, as part of an engaged column, and therefore in relief when considered as a piece of sculpture. Such a capital lying among the ruins of Eleusis is shown in Fig. 177. It is evident that the richer style, the more elaborate carving, befits this peculiar architectural member better than would any simpler form. Again the peculiar conditions of an engaged column, forming part of a heavy pier or projecting from a broad and solid wall, allow of a fantastic crowding of floral details and even animal forms which would be insuffer-

able in an independent capital forming the head of a solid and independent column—part of a colonnade. Such a capital was set upon the antæ of the Propylaia of Eleusis, and its form is shown in Fig. 178, though the heads of the griffins—the winged rams—with lion paws, have been broken away. A good restoration is offered in Fig. 179.

The round building in the Island of Samothrace shows the extraordinary peculiarity indicated in Fig. 180. The square piers which formed its upper story have Corinthian half columns worked on their inner faces. The figure shows two of the large wrought blocks which form the lowermost course of the upper story. Upon these blocks are set up piers much narrower than the blocks; each pier measuring about 17 inches on the exterior face (that is, along the curve of the exterior wall) and a little over 3 feet in depth from face to back, square

176.—Another view of the capital (Fig. 175). (From photo.)

for the exterior and having a half-round upright within, which semicircular upright is worked as a Corinthian column with flutes, base, necking, bell, and abacus complete. Each part, then, is treated with its own capital and base—the square pillar as an anta, the semicircular interior member as if a complete column. The exterior of the building is seen in Fig. 181; a piece of very bold restoration and yet one for which

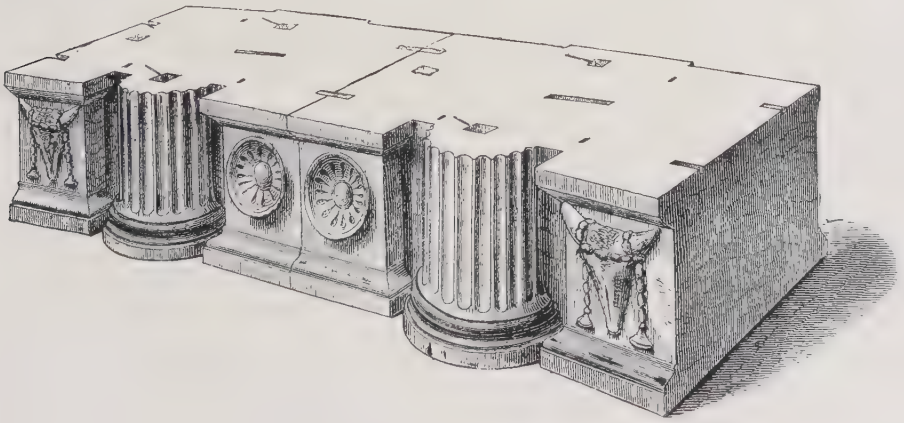
177—Capital for engaged column, found among ruins at Eleusis. (From photo.)

178—Capital of anta, among the ruins of Eleusis. (From photo.)

there is reasonable assurance. In the tomb at Melassa in Asia Minor, recognized as the site of the ancient Mylassa, there is a still more elaborate instance of the same curious treatment of an order. Here the

179—Fragment found at Eleusis, probably of capital shown in Fig. 178, and restored view of capital. (From Hdbch.—Griechen.)

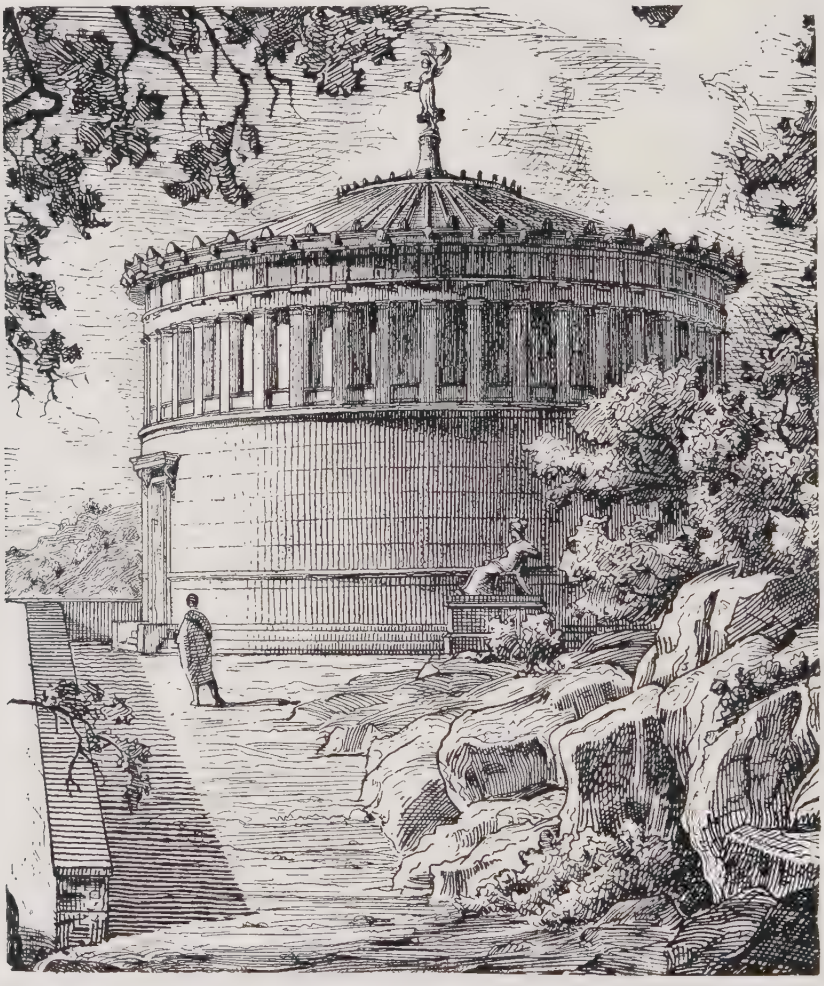
square pillar is faced on each side by a half column. For the plan of this see Fig. 182, where it will be seen that the two half-round columns are separated by a relatively narrow vertical band, and that a pier of oblong plan, wider in the thickness of the wall, narrower on the face, as at Samothrace, is treated fancifully, as if a column had been split apart, separated, and two pilasters worked in between. According



180—Half columns, worked in a pier of the Arsinoeion, at Samothrace. (From Archæol. Untersuchungen.)

to the view taken by the student, this may seem a device unworthy of Grecian refinement—as expressing a reckless disregard of good taste which we do not like to associate with Greek elegance; or, on

the other hand, we may rejoice at the evidence among the Greeks, of such freedom of design. It is, at all events, a lesson to the modern designer who would use the Grecian orders, that the architects of the fourth century B.C. held those orders plastic in their hands and would

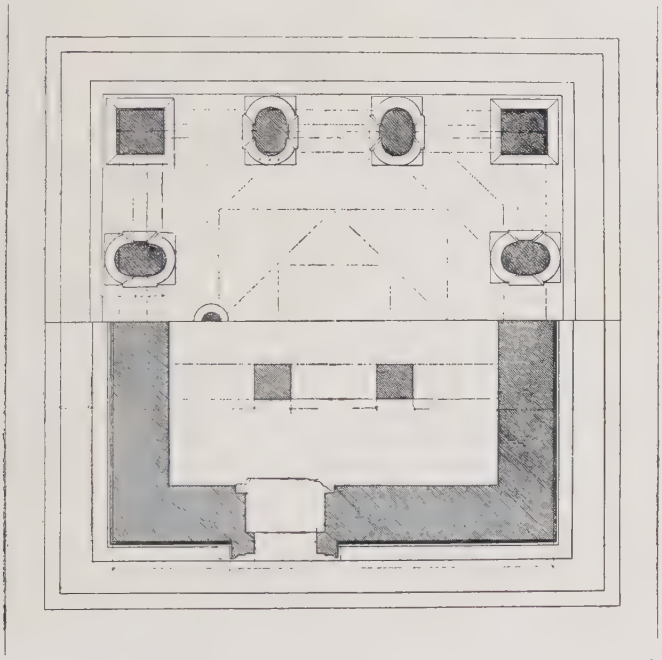


181—The Arsinoeion at Samothrace, Conze's restoration. (From Eu. A.)

modify them on occasion, and, indeed, without unusual inducement. Fig. 183 reproduces the engraved plate which preserves for us the spirited drawing of this tomb by Pars, the artist who accompanied the second Ionian expedition of the Dilettanti Society. The tomb was still in fair condition when it was photographed by Benndorf and Niemann in 1882. A very late monument is the octagonal pavilion, called

Temple, or Tower, of the Winds, from the sculptured figures which form a nearly continuous frieze below the slight moulded cornice (see Fig. 184). The style of the building is like that of the tomb-towers in Asia Minor, considered in Book II, Chapter III (see Fig. 76); but its purpose is unusual. It has a small semicircular apse and two doorways, and it is known that it contained a water-clock. Its date is accepted as of the first century B.C.

As to the temple of the Olympian Zeus at Athens, it was octostyle with twenty columns on each side, and was therefore unusually long in proportion to its width. It was completely dipteral, with even three rows of columns at either end, so that much of the greater part of the smooth surface of the pavement, on the level of the top step or above it, is open—a series of porticos not enclosed in any way, consisting of



182—Late Grecian tomb at Melassa, Asia Minor. (From Ionian Antiq.)

104 columns, while the naos occupies scarcely a quarter of this space. Our information, whether derived from Pausanias or Vitruvius, is of the vaguest sort, for while it is recorded that Peisistratos in the sixth century began the building, and while it appears that the republican Athenians refused to go on with this building founded by a tyrant, it remains wholly uncertain how much work was done in the second

century B.C. at the cost of the Syrian king, Antiochus Epiphanes, one of the successors of Alexander, and how much was left for Hadrian to complete, more than three centuries later. It will be safer, therefore, to treat this building as one of the Imperial Roman triumphs in the use

183—Tomb of late Grecian style, at Melassa in Caria, Asia Minor.
(From Antiq. of Ionia, Vol. II.)

of the Corinthian style, for to add this vast work to the slight vestiges of true Grecian Corinthian is to run a risk of false conclusions.

The characteristics of the Corinthian style as developed by the Greeks are very like those of the Ionic, except as to the capital. Thus the columns vary in their proportions from about nine diameters in the

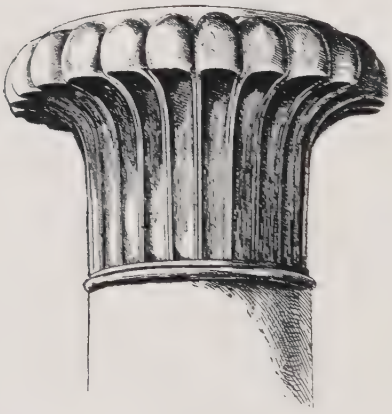
height of the shaft to a more slender form, especially in the smaller buildings. The monument of Lysikrates has the shafts nearly eleven times their diameter in height, but these are half columns engaged in the wall of a round chamber, and they are also small in scale. The flutings are like those of the Ionic style, and they vary in size and number within the same limits. A few exceptional buildings have peculiarities in this matter of fluting. Thus in the little temple of Labranda in Asia Minor the flutes are interrupted by flat tablets used for inscriptions recording the gifts of benefactors. In this monument

184—Building for water-clock, called Tower of the Winds, at Athens: The frieze bears symbolic figures representing the different winds, and the roof once carried a weather-vane. Height, including basement, 42 feet; diameter, 26 feet. (From photo.)

the base is decorated much in the same spirit as that shown in the later Ionic bases—a succession of overlapping laurel leaves resembling an imbrication is used for the upper torus, and a series of raised bands interlacing and forming knots adorns the lower torus. Here the entablature also is of a very peculiar design, the frieze rounded convexly

(or pulvinated, pillow-like, as the term is), and the architrave and cornice have also unusual proportions, and even include unusual forms.

At a later time and under Roman Imperial influence the Corinthian capital went through many remarkable changes, as shown in Book V; all tending towards greater elaboration, and away from purity of taste. Under Greek or Asiatic-Greek influence no such treatment of the Corinthian order has been found, but there are one or two remarkable exceptions to all these styles. Thus at Pergamon the portico of Athena Polias, with an exterior of the most remarkable character in its combinations of orders, has for the interior an order absolutely distinct from all others known, and impossible to classify. The exterior has in its lower story a Grecian Doric shaft carrying a nearly perfect Grecian Doric entablature. Upon this rises a low podium, serving merely as stylobate for the shaft and capital of pure Ionic type, as far as can be judged of normal proportions; but these columns carry another Grecian Doric entablature, with triglyphs complete, and differing from that of the lower story chiefly in its more delicate forms. Thus the frieze above, in the clear between the projecting moulding, is 86.8 inches high, and the triglyphs 66 inches wide; while in the lower story the frieze is 108.9 inches high and the triglyphs are 89.1 inches wide. This already is strange enough; but the portico of the interior offers us the capital shown in Fig. 185. The work on Pergamon[36] from which this capital is taken calls attention to a capital discovered at Neandria in Asia Minor, and two in Greece proper, all of which are of a similar character; and the theory advanced is that an order having this capital was popular in Asia Minor in the third century B.C., and occasionally invaded Greece. In the Pergamon portico the shaft and base are of Ionic proportions and very delicately wrought,



185—Capital found in ruins of portico of Athena Polias at Pergamon. It illustrates an order traced also at Delphi and elsewhere. (From *Pergame*.)

[36] Pergame, Restauration et Description des Monuments de l'Acropole; by E. Pontremoli and M. Collignon; Paris, 1900.

but the shaft is not fluted. Evidently a fluted shaft leading to a fluted capital would be a solecism.

Nowhere has there been found a lower base, square or octagonal, at all resembling those of the Ionic columns at Miletos with their sculptured panels. The antæ, because they present, often, a large flat surface, encouraging the ornamental development of its upper parts, have often capitals of extraordinary richness, as shown in Figs. 169 and 178. All this points to a tendency exactly like that seen two centuries later under the Roman Imperial dominion, in Italy and elsewhere. Then the Corinthian order broke away into such modifications as we call the Composite Style, and others even more elaborate which have received no special name (see Book V). In Greece and the Greek colonies in the third and second centuries B.C. there was more restraint and much less expenditure, but the same tendency to irregularity is visible.

The tendency is, then, steadily toward a less pure taste in the general forms of the building; but, on the other hand, the use of architectural sculpture of pure ornament, treated in exquisite form, sharp and delicate, and giving a lovely play of light and shade, maintains itself as long as the art remains Greek in any true sense. The discussion above of the capitals and entablatures shows this rather fully. On the other hand, we have, for this late period of Greek art, no instance of sculpture of human subject in the frieze, as in the Erechtheion at Athens, wrought upon the shafts of columns as in the Ionic temple at Ephesus, or in the more familiar place afforded by the pediments of temples. Not one scrap of sculpture from any pediment of Corinthian style remains to us. This is only one more reminder of the fact that for the Corinthian style we must go to the Roman period—that only the beginnings of it, its glorious birth and early development, are to be found during the epoch of Greek supremacy.

The combination of different orders in the same building becomes rather common in the later years of Greek architectural history. Thus at Olympia in the sacred enclosure was uncovered the foundation of a circular building (tholos), concerning which there was no doubt; it was the Philippeion or monumental record of the reigns of Philip of Macedon and his son Alexander. The circular peristyle of eighteen columns was Ionic, the fragments of the capitals showing a model of very slight projection beyond the shaft, and very formal—evidently of

matured style. The shafts were of such delicate proportions that the taper was from 24.7 inches to 22 inches. The space between the columns and the solid wall of the sekos was nearly 7 feet wide in the clear. The sekos was very small, hardly 25 feet in outside diameter, and the thick wall left only 18 feet and some inches of inner diameter, and this was encroached upon by what seem to have been semi-columns of Corinthian type. Two or three of the Corinthian capitals are so far preserved that their variety and elaborate character can be recognized, and also this peculiarity –a characteristic seen elsewhere—that the capital is smaller at its foot than the top of the shaft. In such a building it can hardly be thought that this was a shortcoming caused by negligence or economy; it is rather the feeling that in so small an interior a ring of capitals of full size would dominate the space. This would be a natural feeling, for there were twelve of these engaged columns, and if each capital were only 2 feet wide and 2 feet 4 inches high, that ring of highly wrought acanthus foliage with great enriched caulicoles rising from it, would come very near to the eye. The larger tholos at Epidauros is thought by the able artists [37] who undertook the theoretical restoration of the building in the Asklepion to have been the structure enclosing and covering the sacred well. It is in this way that they read the very curious series of circular foundation walls with openings in them, prepared, as they think, to allow of the free passage of the water. The restoration has been carried on by means of the marble fragments found upon the spot, but these have been sufficient to allow of almost complete recognition of the columnar architecture within and without. It is only the superstructure, the wall above the entablature, and the roof—as far as there was a roof—which are undetermined. A circular stylobate carried twenty-six Doric columns with a full entablature; between these columns and the wall of the sekos there was a very narrow gallery, and again between the interior face of the sekos wall and the inner colonnade, the space was narrow, for in the interior of this tholos there was evidently a free colonnade. This divided the inner space into a covered gallery near the walls, and the part surrounded by the peristyle, which our restorers think was open to the sky. This, at least, was certain, the inner colonnade was Corinthian of a beautiful type. One of the capitals is shown in our Figs. 175 and 176. There were fourteen columns in this inner colonnade, and they carried a white

[37] Defrasse and Lechat, "Épidaure," Paris, 1895.

marble entablature upon which there seems to have been no sculpture at all—at least not a single block has been found on which there is any carving other than that of simple mouldings decorated with the egg-and-dart, bead-and-reel, and a deeply cut fret throwing sharp shadows.

Bronze bust, late Greek, commonly called Plato. Found in the Villa of the Papyri, Herculaneum; now in the Naples Museum. (From photo.)

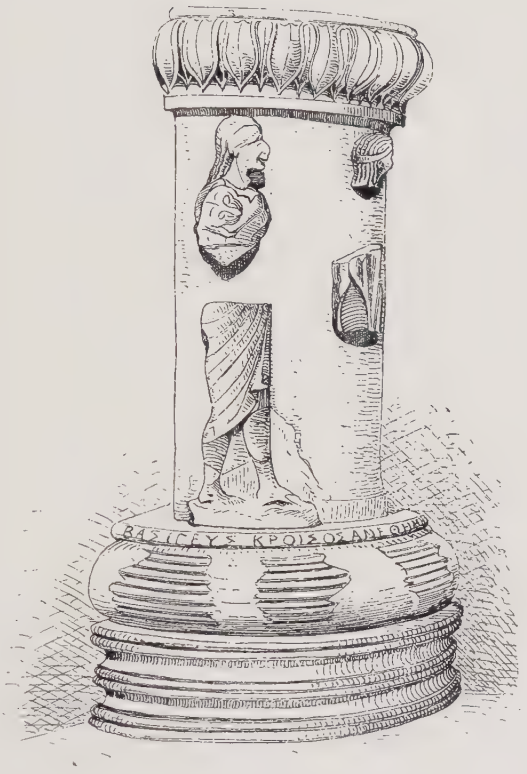
CHAPTER IX

ARCHITECTURAL SCULPTURE AND PAINTING

THE chief glory of Grecian sculpture was reached in immediate connection with the buildings upon which reliefs and statues could be placed. This subject has been treated above, in speaking of the Theseion and the Parthenon. It is always noticeable, however, that the sculpture is nearly independent in its conception—that it has but little reference to the architectural character of the building. Thus the continuous frieze of a fully developed Ionic temple like the Erechtheion, of the portico of a Doric temple like the Theseion, or of the whole pteroma as in the naos-frieze of the Parthenon, might be cut upon any wall with equal propriety. The frieze, when continuous, not broken by triglyphs, was called "Ionic," whatever the style of the building. The interior of the temple of Bassai is an evidence of this, for no one in looking at that frieze in the hall of the British Museum, could find any reference in it to its former place. It is a frieze in low relief, and so is that of the Parthenon, and so is that of the extraordinary outer wall of the temenos of Trysa in Asia Minor, at the modern town of Gjölbaschi.[38] So, in the Doric frieze proper, the sculpture of the metopes was, in the approved examples, in high relief, each metope containing a single composition framed in by the projecting triglyphs and the horizontal mouldings of the frieze; but there was nothing to prevent a metope being carved in low relief or painted, nor was it unknown that the space should be left open. The great triangle of the pediment would be filled by figures of carefully determined size and so designed as to fill the space. An erect figure might stand in the middle, and this would be the presiding divinity or some personage especially important to the general composition—the war in Troy, the marriage of Peleus, the contest

[38] Gjölbaschi; written by some English authors Gyeulbashi.

between Pallas and Poseidon, or the like. The sculpture was of the right scale and the right disposition for the place which it had to occupy; but almost nowhere in these well-known types of Greek work is there reference to the architectural requirements of the space. The building may be richer because a part of its surface is broken up into exquisite lights and shades which clothe the delicately sculptured surfaces, but further than that architectural study had not gone. Architectural students, therefore, are the more eager to discover instances of sculpture designed for the very purpose of helping the building. Where is there, one asks, evidence of that feeling which the Greeks must have shared with other building races, that the sculpture itself be seen to help the building to exist, should even form part of its structure—or that, in other words, the structure itself should pass into sculpture insensibly as it were, so that the forms devised by the student of human form or of animal and vegetable life should seem to lend themselves willingly to help the actual structure of the building? The atlantes found in the Olympieion of Akragas should provide such an instance; but unfortunately no theory as to their presence in the building is capable of verification. The closely reasoned argument of Koldewey and Puchstein (see page 152) is more convincing than the scheme devised a century earlier and accepted by later writers; but it cannot be called final. In the museum at Palermo there is a marble upright, intended apparently for a monumental throne as of Zeus or other presiding



186—Drum from the older Artemision at Ephesus, showing relief sculpture. (From Hdbch.—Griechen.)

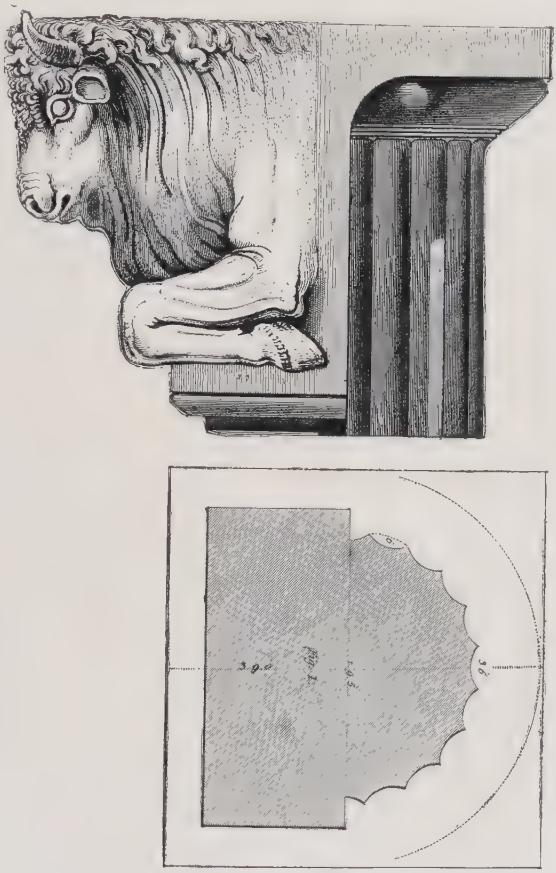
divinity, and this is sculptured with human figures surrounding and yet forming part of its mass in an obvious way. That same feeling for sculpture which adorns a solid pillar carrying a great

187—Portico with caryatides at Delphi. (Photo from cast at Paris Exhibition of 1900.)

weight and losing nothing of its visible strength by its artistic treatment must have been found in the Columnæ Cælatæ [39] of the temple at Ephesus, already described; and it is curious that we have been able also to recover evidence of this motive in the older Artemision, the temple at Ephesus which was replaced by the later magnificent shrine.

[39] Columnæ Cælatæ: "Columns adorned with relief sculpture."

One of these earlier sculptured drums is given in Fig. 186. At the so-called Incantada in Salonica, there are figures set up against square pillars and these, though not acting as atlantes or caryatides, carrying no weight, even in appearance, modified the uprights in a similar fashion. They suggest a close community of feeling with the statues of cathedral doorways in the thirteenth century. There is a caryatid with a basket capital resting upon the head, in the Central Museum at Athens. One of the little treasuries, more properly called shrines of dedication, at Delphi has two caryatides which are the only support of the entablature across the open front and between the antæ. This is the result of the recent excavations at Delphi, and a restoration of it, carefully made and not too daring, was in the Paris Exhibition of 1900. A photograph of this is given in Fig. 187.



188—Crowning member of pier, "Sanctuary of the Bulls," Island of Delos. (From C., K., etc.)

The bull-head capitals of the great hall in the Island of Delos and their picture, given as in Fig. 188 from the careful drawings of Mr. Kinnard,[40] must be mentioned here, although there is continued dis-

[40] Antiquities of Athens and Other Places in Greece, Sicily, etc., by C. R. Cockerell, W. Kinnard, and others, London, 1830. The drawings given in an earlier volume, that known as Volume IV of Stuart and Revett, Antiquities of Athens, are not to be trusted. Mr. Kinnard insists upon their inaccuracy; but the very careless and inartistic drawing is visible on the slightest examination. They are no part of the original work of Stuart and Revett.

pute as to their probable epoch, and although they show an undue Asiatic influence. The figure is such a restoration as a skilled draughtsman makes in trying to explain a much broken and disfigured sculpture. It is unfortunate that no photograph of the unchanged sculpture can be obtained, but the ruins at Delos have been neglected and the sculptured stones have been much injured since 1825.

Some of these attempted utilizations of sculptured form are incongruous; they offend against our sense of what is fitting. Sculpture is not at its best when it is treated as the blocks in the Delos hall are treated. Even the Delphi caryatides are unattractive and give a singular effect of being archaic—as if a succeeding generation would greatly improve upon the design. We have, however, one faultless work of combined sculpture and architecture, the famous Portico of the Maidens, attached to the Erechtheion on the southern side. It has been reproduced very often, and it has seemed well to give here the less known view from the west, as shown in Fig. 189. The reader will easily see newly placed blocks where the ancient structure was decaying beyond the point of safety. Two such blocks are at the top of the building on the left and one on the right under the feet of the statues. Of the four statues on the front, the second from the near corner is the terra-cotta reproduction taking the place of that statue which was sent to London by Lord Elgin, and which is now in the British Museum. The others are all the original and not greatly injured statues. The capital of the one next to the terra-cotta figure has been recently replaced by a plain Doric capital, very properly, showing the difference between itself and the wrought baskets of the other five. The wonderful charm which this work, even in its ruin, has for us cannot be rightly understood without much consideration of its merit as a work of sculpture. That is not our present business; but it may be well to refer to the very ingenious explanation made by Viollet-le-Duc of the perfect harmony attained by the grouping of these statues. That the figures should press inward toward the centre of the structure while the entablature above serves as a tie to hold together the tops of the six pillars (for they must be considered as pillars in such an inquiry) gives a sufficient explanation of the general harmony attained by this remarkable work. With excellent judgment the entablature, supported as it is by statues, and not by columns or antæ, is reduced in complexity, the frieze omitted, and the rich cornice set upon the epistyle. Add to this the most exquisite

proportion, especially in regard to the vertical measurements—the podium, the statues, and the entablature having the most perfect relations to one another—and again to this the most impeccable accuracy of modelling and beauty of cast drapery, and the triumphant

189—Portico of the Maidens, from south-west. (From photo.)

result is secured. The portico is one of the few pieces of architecture which cannot be imagined as susceptible of improvement. This result cannot be found very often in architecture, for the art is too complex, with too many divergent and contradictory aims, to reach very often an evidently faultless result: and without elaborate sculpture it cannot reach its highest development.

The sculptural adornment of architectural masses is generally

carving in relief. Rarely does a statue or a group of figures "in the round" harmonize in all aspects with the buildings of which it forms an accessory. The supremely noble statues of the Parthenon pediments may or may not have made up an ideally fine design for the filling of the triangular space at either end. We have no Greek statues in their original places, nor with their painting, and the painted masses about them, even in partial preservation. What has been preserved,

190—Statues from the east pediment of the Parthenon. Three goddesses. (From photo.)

from later ages, for our study, is not wholly delightful; statues seen against the sky—seen against walls and piers, disposed in groups by doorways—the more individual and forcible the sculpture the less well does it fulfil its architectural mission.

Figs. 190 and 191 are statues from the eastern pediment of the Parthenon. At the extreme northern angle a horse's head rose above the geison, and next to this came the group of two draped women who seem to be suddenly awakened. The seated figure gathers her feet under her as if to rise. In the same illustration, Fig. 190, a third draped woman is seated on a higher support; and these three are called commonly the Fates—though other names have been given. Fig. 191 is a splendid draped woman in rapid movement, balancing the so-called Iris of the southern half of the pediment. There is no sculpture in the world finer than this. Nude forms and drapery alike are the models of all perfection; and there is even a certain appropriate conventionality, a certain added firmness of mass and line, as of

figures intended to have a severely limited field which they were to fill. And yet it cannot be said that the admirers of Greek architecture are quite sure, all of them, that the building would be the better for what is, after all, highly realized sculpture in the round. The metopes just below them are in high relief—would it or would it not be better for the building if these pediment figures also had a marble background immediately supporting them?

It would, indeed, be absurd to set up a theory of unfavourable appreciation on the strength of these surmises. No one living has seen these statues in their place; no one for more than 200 years has seen them in complete condition, no one for 1,600 years has seen them with their polychromatic treatment and surroundings. And yet, whereas we know that relief sculpture, both high and low relief, is the ideal adornment of a noble building, we cannot be equally sure of the architectural effect of statues set high above the eye, upon the broad shelf above the horizontal entablature. Figs. 192 and 193 show two slabs of the naos-frieze of the Parthenon, that on the left hand a group of divinities from the east front; and the other, from the north front, part of a procession of the youth of Athens, male and female, carrying votive offerings and leading beasts to the sacrifice. Fig. 194 is one panel of the parapet which once surrounded the little platform on which stood the temple of the Wingless Victory. All these are as faultless and as powerfully suggestive to the mind as are the statues of the pediments—or as any statues can be; and certainly they seem to belong to the building, to be natural and obvious as growths from its very structure, expressing its significance and proclaiming its beauty. The student who wishes to understand this matter should go to Athens

191—Statue from east pediment of the Parthenon (forming part of group, Fig. 190, and next figure on the south, or left hand). (From photo.)

192—Panel of east front of the naos-frieze of the Parthenon, now in Acropolis Museum. Group of divinities. (From photo.)

193—Slab of the naos-frieze of the Parthenon, east front. Now in London. (From photo.)

and haunt the museums there. Those museums are so rich in the noblest sculpture that weeks go by and one is not content with his knowledge of them. There is no such sculpture-show in the world—or so the student thinks. Then he awakes to the fact that there are few statues in Athens, and only one or two of high quality; that the

194—Relief, a Victory pulling up her sandal. Frieze of parapet, Temple of Athena Nike, Athens. (From photo.)

Roman proconsuls took the statues away, while those which were of bronze were easily turned into coins during the hard later years. He discovers that all the sculpture he has cared about so intensely is marble relief. And he reflects that, short of six weeks in Athens, he would never have known what relief sculpture might be to the spirit even though that sculpture be dismounted, disarranged, thrown down from its fixed place of the artist's choice.

The high reliefs of the metopes, and the low reliefs of the Parthenon frieze, the Theseion frieze, the Bassai frieze, the Erechtheion

frieze, the parapet of Athena Nike, and the bands of sculpture at Gyeulbashi (Gjölbaschi) have all been mentioned in the discussion of the temples and their surroundings. The strange anomaly of the Ephesus columns and the only half-understood dispositions of the Nereid Monument at Xanthos, of the Mausoleum at Boudrum, and the great altar of Pergamon, have been recalled. It would be one chief reason for reproducing the best conjectural restorations, that in this way at least a general sense of the sculpturesque splendour of Grecian buildings might be obtained. The wonderful temenos wall at Gyeulbashi would need no restoration to work upon the student, but this has no architectural character at all—the long rows of spirited reliefs are set up in a naked stone wall; and so it does not come within our field of study. Like the votive reliefs of smaller size and the tombal reliefs, those vestiges of ancient Trysa must be left for the books on sculpture.

Another universal system of ornament has disappeared, even more completely than the sculpture, from the Grecian buildings. This is the painting of the exterior. In temples built of the soft tufa of Sicily and even of the finer and harder stone of Campania and the shores of the Gulf of Tarentum, it was apparently universal to cover the external surfaces with a cement or stucco finer and thinner or less perfect, according to the epoch and the capacity of the community for delicate work. It may even be thought that the last refinement in the curve of a moulding and the sharpness of the arris reached its final perfection in this plastic surface. At all events it is upon this surface that the painting was applied, whereas in the marble temples of Attica, the Parthenon and the Theseion, the painting was applied directly upon the marble; that is, the technical method employed in applying the colour must have been different in the one and in the other case. It is an accepted belief that in the case of the uncoated marble this painting was of the nature of encaustic. The marble would absorb a good deal of colour and then the liquid vehicle, containing much wax in a state of solution, would have that wax melted by the close presence of hot irons, and in this way would be fixed, together with the colour with which it was combined.

In a temple on the eastern hill (Temple F; or S, according to Hittorff's lettering), at Selinus, in Sicily, there were found abundant traces of the old colour. The ground of the carved metopes was red, and the flat moulding which separates the architrave from the frieze above

it was a brilliant yellow—the guttæ, those little conical projecting nail-heads of the mutules, were blue; and there is every appearance of a grave negative colour, a kind of stone colour, having been applied to the walls behind the porticos. At Ægina, the famous temple from which the sculptures were taken was left also with its painting in such condition that some of it was preserved. In this case the entablature had much red in its painting; nearly every broken piece that has been examined has more of this colour than of any other; but the great panel of the pediment, that against which were seen the statues now in the Glyptothek at Munich, was painted in a solid blue. The Parthenon, when the measurements and studies were made by F. C. Penrose about 1846, still retained distinctly recognizable traces of painting along the cyma recta of the west pediment. A row of anthemions as broad as the moulding allowed, was divided by painted leafage, so as to give to the moulding a semblance of an egg-and-dart moulding, except that the dart or tongue was not strongly marked, was rather a leaf than a spear-head. This band was blue, with the large ovals containing the anthemions (about 4 inches high) of bright red with the anthemions in gold, as appears almost certain from the preparation for the gilding which still remains. Beneath the roof of the portico there was still better preserved painting, but what is here described was on the extreme outer face of the building. The metopes of the frieze were certainly grounded with red, but in what way the sculpture was relieved upon this red ground is not known. Above the carved metopes there ran a painted band of what seemed to have been dark red, the lines taking the shape of a rather complicated meander, and this was found at many parts of the frieze and for many feet of length in this and in that part of the building. At each corner between the mutules, where the space at the projecting angle was large, there was a certain amount of leafage very decidedly marked. The inner face of the pronaos was painted at the top of the wall, where in modern parlance the cornice comes, though it is not a cornice like that of the Doric entablature. A fret or meander in gilt on a blue ground was modified by separate squares between the groups of straight lines, and these squares were bright red with gold tesseræ, evidently closely imitated from some design in mosaic, as the tiling of a floor. Then the overhang, the drip moulding which is given for the sake of its shadow, although as a drip it is of no use, is painted with large, broad leaves alternately blue and red, with the mid-ribs counter-changed.

The Propylaia at Athens was painted as follows, on the extreme outer face of the side toward the approach: Beginning at the top, the gutter-member which took the place of the cyma recta was painted with a close imitation of an egg-and-dart moulding, and immediately below this the smaller mouldings which mitre at the corners where the geison supports the raking cornice, and the two roof mouldings separate, was painted with leaves alternately of red with blue centres, and blue with red centres. Below this the mutules were blue, with the guttæ yellow, or perhaps gilded, and the large grooves of the triglyphs were blue, leaving the flat uprights of the outer surface unpainted.

In the Theseion the roof of the portico was painted between the stone beams with deep blue, divided into squares by lines of red and gold and with further ornamentation in the squares; and this colouring was helped by the recessing of parts of the squares to make panels. There is much similar painting about the Theseion. There are large and elaborate frets in red on dark blue and in gold on dark blue.

All the above are Doric temples, but the ceilings of the Erechtheion were even more elaborate than those of the Theseion, although the range of colour is not greater; strong red, deep blue, gold, with green used much more sparingly, together with that white or yellow which comes from a certain treatment of the marble—are apparently the only colours used.

That the Greeks were very ready to let the unpainted marble remain even in large masses, in contrast with the strong solid blue and red and gold of the applied ornament, is certain. Many attempted restorations show a painting in darker colour of the lowest third or lowest quarter of each shaft; and others attempt a decorative colour-scheme upon the wall of the naos, as if to set off the columns of the peristyle. Neither of these conjectures seems to have sufficient support. The inference as to the changed colour of the marble by deliberate application of wax painting seems inevitable, although the action of time on such a surface has not been perfectly ascertained. We may assume that the unpainted surfaces of marble were not vividly white. On the other hand, the very abundant material we have for the painting of Greek statues of the earlier and the less early epoch down to the time of the Roman domination, would lead us to infer much use of patterns upon the drapery and even strong colouring of the flesh. The well-known Hellenistic Artemis of the Naples Museum, with band of red around the skirt of her drapery, and the traces of painting on cer-

tain statues in other museums, have been almost forgotten in view of the prodigious discoveries made on the Acropolis from 1883 to 1886, and of scattered pieces at other times since that period. Thus the draped votive statues found at the west end of the Erechtheion are represented as clothed with the chiton of crinkled stuff, and outer garment, the palla or peplos, of which one flap passes under the left arm and leaves the chiton exposed over the left shoulder, left breast, and left arm while it covers the rest of the person, and over this again a cloak, himation or chlamys, looped up in front or held by the left hand.[41] These garments, then, are painted, the chiton in a colour which was probably blue but when found was a strong, deep green; the second garment, the palla, with a spot pattern or semé in which two or three colours were used to make the spots, as, for instance, a black centre, four red leaves and four blue leaves to each little rosette; and finally the outermost garment with a broad and massive border carried with the utmost care in and out of all the folds of the sculptured drapery. The hair was gilded upon a red ground, or perhaps gilded in part only to produce a sparkling effect of gold. The eyes and lips were painted, and there were earrings and bangles with traces of colour and gold.[42] Those statues were undoubtedly of a period preceding the Persian invasion, and therefore preceding the Parthenon of Pericles; but we have no reason to suppose that the few years which elapsed before the putting up of the Phidian sculpture in its place had changed the Athenian habit of mind with regard to the painting of sculpture. The forms carved by the ancient Egyptians, Asiatics, and Greeks alike were in no way complete until the painter had done his work upon them.

Since the finding of those ten or twelve female statues and one or two male statues of smaller size, the famous relief sculpture of the three-headed Triton, or such other monstrous being of the sea, has given us a new idea of what the sculpture of a pediment might be.

[41] The exact form of garment corresponding with each of these terms, as used in the fifth century B.C., is uncertain.

[42] See the author's article in Harper's Magazine for September, 1890, Recent Discoveries in Painted Sculpture. The elaborate drawings made for the author by Mr. Gilliéron, used in that article, were afterward transferred to the Museum of Fine Arts of Boston, Mass. They are all on the scale of one-half full size, and their accuracy is beyond question. The instructions to the artist were to add not one touch of color which was not in direct reproduction of the painting on the original, and he followed these instructions implicitly and with great skill.

Here the whole triangle must have been filled with sculpture in low relief; but this relief so simple, so little elaborated, that the hand work of the painter was needed before the intended effect could be reached. We are reminded of those missing details in the naos-frieze of the Parthenon, which must have been painted in, without even a suggestion in the carving: of the weapons and the bridle-reins, evidently once supplied in gilded bronze, as in the Dexileos tomb at Athens. The Triton-relief was covered with vivid painting when found. This painting, in all these cases, tends to perish from the gradual dropping from the surface of the particles of paint. It is generally a mistake to speak of the colours *fading*; they drop off, and every little jolt, every jar given to the Acropolis rock by a heavy wagon in the street below and 600 feet away, will cause a dozen little particles to separate themselves from the surface. Every day when a glass case is opened, the outline of a piece of marble lying on the floor of the case is marked in powder of red, blue, and black, which has fallen during the hours since the case was opened before.

In view of all these considerations there can be no doubt that the first and powerful effect of a great Doric temple was a sharp and decided contrast of primary colours, or what were nearly primary colours, red, blue, and yellow; the sculpture, and the architectural framework which supported and surrounded it, alike, all as brilliant as the resources of the painter could make them; and this raised on high for the sun of Greece to emphasize. It is evident, too, that the sculpture in its minute elaboration of painted details was helped out by the constant application of gilded metal in jewels and ornaments of women, weapons and trappings of men, bridles and other accoutrements of horses.

CHAPTER X

DISPOSITION AND GROUPING

WE know of very little architecture of the Greeks which is not entirely columnar. Even the theatres have their sole decorative treatment, so far as the stone building which remains to us can tell their story, included in a series of open porticos. The market places of towns were often fronted with colonnades; and these might enclose them on three or even on four sides. Where the hillside was steep and the town covered it, presenting its face to the sea with one row of buildings looking over the roofs of the row in front, the colonnade became a dignified and important structure, and might have two stories in height, the upper story being eminently a place for leisurely promenade and for conversation. This feature is seen at Pergamon and at Assos, towns on the Ionian coast, quite recently explored with care.[43] At Assos there is the Bouleuterion, which is a building of similar character, although intended as a place of meeting for a governing body and therefore coming nearer to our modern ideas of a covered and enclosed structure for absolute utility than most of those with which we are acquainted. If we could have the Telesterion or house of initiation at Eleusis, we should know more of the Greek ideas concerning a hall; but as it is, the architecture of Greece, as it presents itself to us, is a matter chiefly of porticos with only such closely shut up and unelaborated rooms as might suffice for mere custody, as of a statue of a divinity, or for mere storage, as of treasures of semi-sacred character.

The Greek theatre was very closely connected with the religious ceremonies, especially of the worship of Dionysos, called also Bakchos

[43] See the work entitled Pergame, Restauration et Description des Monuments de l'Acropole, by Messrs. Pontremoli and Collignon, Paris, 1900, in which are given admirable restorations, closely based upon the remains discovered and measured; also the different reports of the American School of Classical Studies at Athens.

or Bacchus, the god of Joy and Prosperity, both in this world and in the imagined world of the future; the patron of the vine and of wine, and the creator or inspirer of tragic drama. The extremely mystical character of the worship of Dionysos prevents the modern student, other than one devoted to the investigation of religious rites and their significance, from seeing very clearly how dramatic art developed itself from the choral verses recited in praise of the god, and the exact place which the theatre held in Greek thought of the graver kind. When in "The Frogs" of Aristophanes the god Dionysos himself, on the stage, addresses his own priest in the audience, in his seat of state, rallying him and the Athenians, the significance of that incident is hard for a modern to understand; just as it is hard, even impossible, for a modern to understand the feeling of the graver spirits as to the future life and the meaning of the representations sculptured upon the grave-monuments. All that the student of architecture has to consider is the apparent purpose of the builder; and we note these peculiarities.

The theatre was generally arranged upon a hillside, more or less shaped by the hand of man. Apparently the natural slopes upon which the spectators of the early drama had watched the plot unroll itself, were fitted at a later time with steps of a more permanent form, which would not be destroyed by the feet of persons ascending or descending the slope, nor made useless by rain. To select a hillside, to scoop it out into a semicircular funnel, to set broad steps upon it, first, no doubt, of wood, then very soon of stone, and to give those steps a more and more refined section, one carefully thought out and planned for sitting places, for communication, for the draining off of rain-water; then to provide a pavement, below, upon which the actors would stand and move, recite their speeches and go through such gestures and changes of place as the scenes selected made necessary—all this is the obvious tendency of such undertakings among a highly intelligent and resourceful people. In addition to the speakers of the principal dramatic parts, there was to be accommodated the Choros, whose mission it was to keep the general plot of the drama before the spectator, to interrupt or accompany, as the case might be, the speeches of the leading actors, to tell the story. The persons of this choros seem to have moved around the altar of Dionysos (the thymele) which stood on a flat space reserved within the nearly circular curve of the innermost line of seats: which flat place was called the orchestra. As

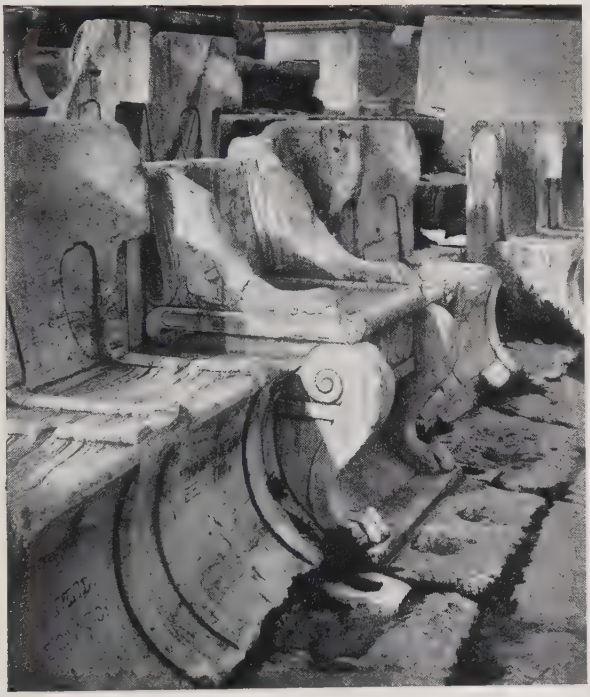
to the place occupied by the leading actors, there is great dispute. It had been assumed for many years that the position of these actors upon a stage five or six feet higher than the lowest step and the floor of the orchestra, was the universal rule. This idea had been derived from the existing remains, all or most of which show the disposition as modified in Roman times; though it does not follow that the modification went so far as to build a stage where none existed before. There has been, however, the theory set up and advocated since 1875, that there was no raised stage in the Greek theatre proper; that the actors of the principal parts stood on the same level as the members of the choros. A modification of this last idea seems to have taken shape within a few years, and it is now asserted as a well-ascertained fact that the Greek stage was raised perhaps two feet above the orchestra, and that a second and higher platform stood beyond this, or farther from the audience. The front of this platform would serve as a background for the actors; and the top of it, narrow but as long as the width of the whole theatre, might be reserved for some part of the drama, perhaps for the actors taking certain exceptionally dignified parts.

There still remains the question how far the view of the spectators was limited on the side where the actors appeared, by any wall or screen or architectural construction of any sort. We know that the Roman theatres possessed a definitely planned and elaborate architectural background, against which the whole dramatic display was relieved, and which had doors opening in it, from which some actors entered and retired. How far this was the case with the Greeks we do not know. It has been alleged by enthusiastic students of the habits of the Greeks that their love of beautiful scenery would not have allowed them to have built out a fine view, such a scene as would be before the eyes of an audience gathered on the sloping steps of the theatre of Taormina, with its view southward along the Sicilian coast; or of Athens, with its look-out across so much of the city as was built south of the Acropolis, and thence to Piræus and the sea—for the Athenian theatre was excavated and built up on the southern slope of the Acropolis itself —on the accumulated débris which had crumbled down from the rocky cliff of the citadel. No Greek theatre remains in such condition that we can judge of this finally, and the question must be left for Book V and the consideration of the Roman theatre and its origin.

195—The larger ancient theatre at Syracuse, Sicily. (From photo.)

196—Theatre of Dionysos at Athens, from the east. (From photo.)

All that we have of the pure Greek practice in this way is to be seen in such views as Fig. 195, in which the theatre at Syracuse in Sicily is shown from that side of the stage which is on the left of a spectator sitting in the front row of seats; and Fig. 196, which is a view of the theatre of Dionysos at Athens, from a point exactly similar to that occupied by the photographer in Fig. 195. The Syracuse theatre has been the scene of elaborate excavations among the substructure of the



197—Marble chair of priest of Dionysos, in the theatre, Athens. (From photo.)

orchestra and stage. The Athenian theatre has been cared for during many years, and this with the result that one is no longer certain as to the antiquity, even the Roman antiquity, as from the second century A.D.—of the pavement, the steps, or of whatsoever he sees before him. It is the story of the Roman Forum over again. Here is a pavement, but does that pavement date from the time of Augustus or from the time of the sinking empire and the ruined city of the fifth or sixth century A.D.? But in the Athenian theatre there are those specially treated marble chairs, marked with inscriptions giving the names of the dignitaries for whom they were set apart, and chief among them the seat of the priest of Dionysos, directly opposite the middle of the

stage. The form of these marble seats is so pure and refined, and the sculpture upon the principal one so exquisite, that a good Greek period must be accepted for this, and thence a relatively authentic origin for the whole disposition. Fig. 197 shows this seat, and it will not

198—Theatre of Dionysos at Athens, from the south. Wall of the Acropolis beyond, with ruins of choragic monument of Thrasyllos. (From photo.)

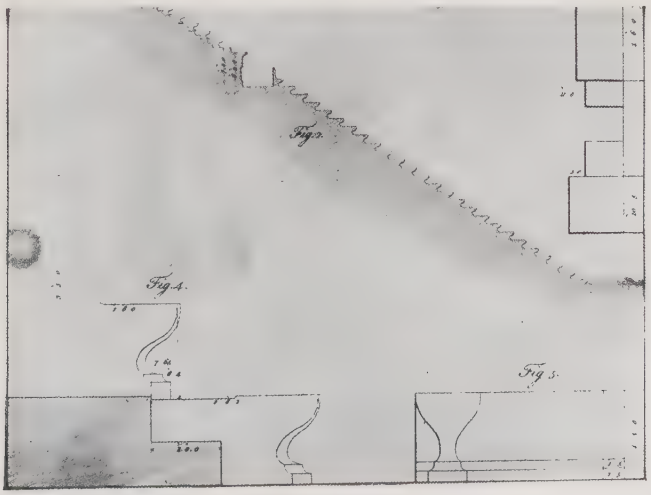
be hard for the student to locate it in the picture (Fig. 100), a little to the right of the middle.

Fig. 198 shows the Athenian theatre looking away from the orchestra and the stage, that is to say, nearly northward, toward the steep cliff of the Acropolis, faced by its ancient wall which serves to retain the loose earth and crumbling rocks, and to make the ascent more completely impracticable for an enemy.

Fig. 199 gives a section through the steps of the theatre at Stratonicea (Eski-Hissar) in Asia Minor. The wide horizontal passage

left between the rows of steps, measuring about 5 feet, is the only horizontal gangway reserved along the slope of the auditorium. Passages radiating from the orchestra outward, and allowing the audience to reach their seats and leave them without crowding, are always numerous in these theatres. At Stratonicea there are eight such passages remaining, easy stairways in the slope of the outer or upper division; and there seem to have been ten in the lower and inner part, that is, within the horizontal semicircular passageway.

It remains to be said that it was frequently necessary to build up an outer wall and other substructures to support and maintain the seats. In many a site, where no hill was found steep enough, nearly all the structure had to be built up from level ground, but this was evidently avoided whenever practicable, and even situations more remote from the town were selected with a view to the greater ease of building. Such a theatre existed at Aizani in Asia Minor, where, however, a natural hill has been retained by a lofty wall and then in part cut away, so that the level of the site beyond this wall is almost



199—Section and details, theatre at Stratonicea, Asia Minor. (From Antiq. of Ionia, Vol. II.)

as low as the level of the orchestra. Another is at Patara, also in Asia Minor, and in this instance the buildings of the stage and proscenium are preserved in great measure, though largely hidden by accumulated earth.

The arrangement of the Greek theatre brings up at once the question of the placing of buildings upon hillsides, and the general dispo-

sition of the Greeks to take advantage of the hilly ground so characteristic of Hellas proper, and to a great extent also of the Ionian coast of Asia Minor. Many different opinions as to the Greek habit of mind with regard to natural beauty have been held by modern archæologists. It is certain that the mere fact of a picturesque arrangement of buildings, rising one above another on a steep bank between the sea and the hill crest, is insufficient proof of a strong sense for beauty of site and picturesqueness of treatment. Thus Fig. 200 shows the

200—Acropolis of Athens, from south-west. The arches under the hill are of the Odeion (Fig. 229), and farther to the right the portico of Eumenes II. (From photo.)

Acropolis rock at Athens from the south-west, and in the foreground is seen some quite modern preparation for future building, while on the extreme right is the palace of the king of the Hellenes, with other modern buildings, and a church tower of interesting Byzantine style built in 1882. The Acropolis rock is made defensible by the wall already mentioned, immediately above which on the right rises the little Acropolis Museum, where are preserved treasures of art and epigraphy found upon the rock. The Parthenon, then, occupies the middle of the picture. On its left is seen the Erechtheion, which does not often show in such views, because the ground falls slightly, aiding the perspective. It is visible here because the view is taken from a considerable distance, and also from a height, namely, from the hill on which stands the monument of Philopappos. To the left of the Erechtheion are the buildings of the Propylaia, with the temple of

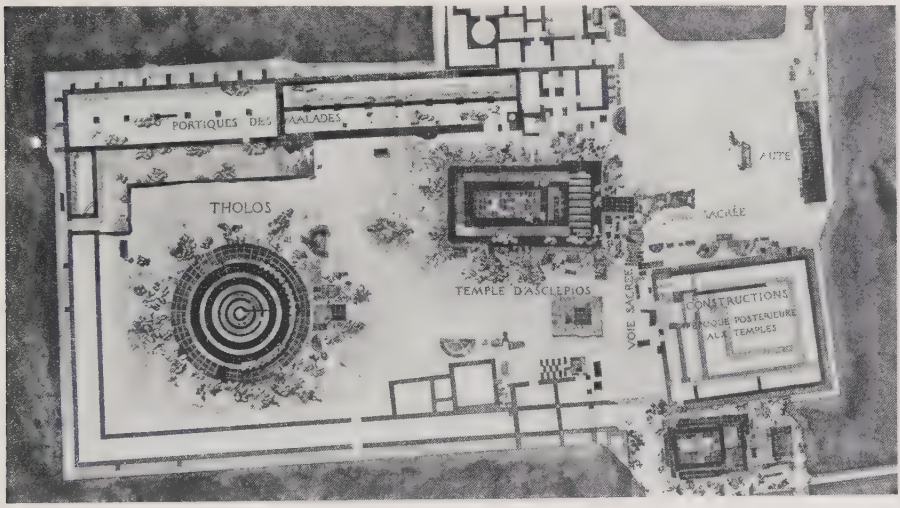
Athene Nike well in front and the Roman pedestal farther to the left. The arched structure which is seen below, under the rock, is part of the Odeion or musical theatre, for which see Book V, and later buildings immediately adjoining. The theatre of Dionysos is hardly visible, as it is far to the right and lies low; it is immediately beneath the two white columns which are seen rising against the masonry wall and under the museum of the Acropolis.

Now in this scene we have no assurance that Greek feeling for landscape, for the beauty of nature, for picturesqueness of grouping, has counted for much. The Acropolis was a place of defence, the true citadel of Athens; and it had, moreover, a traditional sanctity dating from a lost and forgotten time, when it was the town itself, the primeval settlement of the Ionian people there. The Parthenon was built on the highest point of that site, the Propylaia at a convenient place for ascending the rock and entering the enclosure, and so on—there is no adequate assurance for us that the Greeks cared much about the beauty or the imposing character of the site. So at Pergamon, at Assos, at Ephesus—the height and steepness of the hill, the neighbourhood of the sea were not the attractions, as it appears; but the town was built around its little harbour and gradually grew up the hillside, while the buildings of extreme importance and dignity were set on the points of vantage; and often within the citadel. Pergamon was built up by an art-loving king and his immediate successor, much as in the eighteenth century were built up Nancy and Lunéville. The difference between the flat plain where are those towns of Lorraine, and the mountain side of the Ionian Greek city is, however, immeasurably great. At Pergamon the market-place (Agora) was already half-way up a steep hill; this hill was united with another by a substructure with heavy buttresses to retain the earth, and this substructure was crowned by a covered portico stretching for 600 feet along the slope, and visible from a great distance across the harbour. On a level with this and to the north were built in later times several Roman edifices, including a temple dedicated to the Emperor Caracalla—though this is probably a rebuilding of an earlier structure. On a higher part of the slope is placed the theatre, which, indeed, is connected with the terrace and portico just mentioned; and the hillside which carried the theatre was elsewhere so steep that buildings could hardly be set upon it to advantage. Above this, however, were the buildings for which Pergamon is permanently famous. There, and at a height of 100

feet from the floor of the long portico, was the famous altar of Zeus the Saviour, and around the base of it a flat, reserved space filled with statues and groups of sculpture of varied form. Above all was the great temple of Dionysos, but at this higher level the Roman buildings have so replaced the Greek temples and colonnades that no clear sense of the original conditions remains to us.

Dealing, however, with the most remarkable structure among these, the altar of Zeus is known to have been raised upon a square platform approached by twenty-five or thirty steps on the side toward the theatre. The generally accepted restoration makes this platform about 110 feet long, measured in the direction of the sea-coast nearly north to south, and about 100 feet wide, that is to say, in the direction of the slope of the hill. At the highest point, or where the ground fell away the most, this was about 18 feet above the site. The face of the wall which retained this platform was covered on all sides with that band of sculpture with human figures in high relief, famous since its discovery about 1870, and representing the battle of the gods with the giants. The frieze is known to have been about 8 feet high, and the figures are larger than life. The greater part of the well-preserved slabs are in the museum at Berlin. Above this platform, decorated with so rich a substructure and approached by a stately flight of steps, there rose a double colonnade of Ionic style; and within this double colonnade there was a great altar, itself composed for the most part of the burnt bones and charcoal of the wood-fire, the result of many sacrifices, and of the burning of the victims on a great scale. A second, much smaller, frieze was combined in some way with this Ionic colonnade. The restoration of Richard Bohn made in 1880, soon after the sculptures had been recovered and the monument measured up and reconstructed in imagination, showed this portico nearly surrounding the open platform where the altar stood, but according to other restorations the portico was in two parts only on the northern and southern sides, leaving the altar open to view from the hill and from the sea. The ruin is very complete; there is nothing in actual permanent location except the foundations of the platform, and all the suggested restorations have been based upon the bringing together of the fragments and the computation of the space they would necessarily occupy. For the study of Greek sculpture the Pergamon altar is of enormous importance; for a study of architectural disposition it is still too little understood to be a trustworthy subject for our conclusions.

The sacred enclosures of Olympia and Epidauros show how the temples, porticos, stadia, shrines, and treasuries were distributed. It is hard to determine the system, if any was observed. Fig. 201 gives the restoration by Defrasse and Lechat of the sacred field of Asklepios at Epidauros. The buildings here are more readily traceable than at other places of excavation, and the restored plan, at least, needed little bold theorizing. The titles only, such as "Voie Sacrée," "Portiques des Malades," and the like, are open to question.

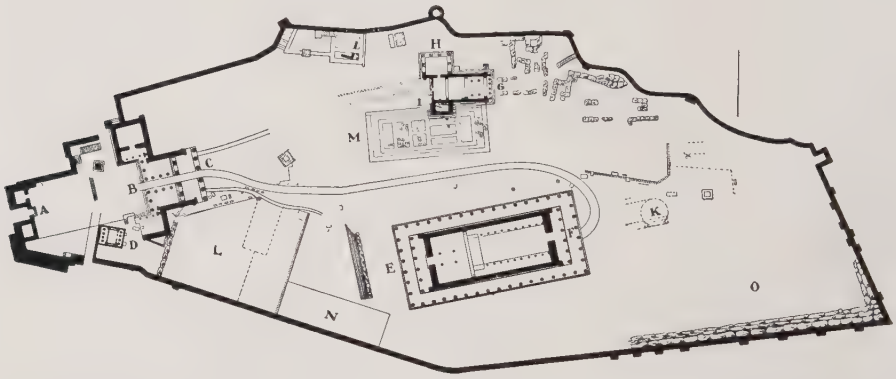


201—The sacred enclosure at Epidauros: restored plan. (From Defrasse and Lechat.) The temple of Asklepios is set very nearly east and west.

The natural desire of students in a subject so fascinating and so stimulating as Grecian fine art is to find all good in it. The lover of effects in landscape gardening, in that form which provides for the placing of buildings and the planting of groves, the taking advantage of inequalities of ground and the like, naturally ascribes excellence in this to the ancients whom we know to be our superiors in so much else. Thus the plan of the enclosure upon the Acropolis at Athens (Fig. 202) is translated in a very curious way by some writers, who tell us just how the visitor had revealed to him, one by one, the glories of the place. The newcomer is supposed to discover, one by one and in due order, the colossal statue of Athena Promachos, the Erechtheion, the Parthenon, as well as those other shrines and groves and sculptures of whose places and appearance, two thousand years ago, nothing definite is known. Why should the administrators of old Athens,

and their artistic advisers, have thought so much of one, the first, impression made upon the visitor? The glory of a work of art is in its working upon the student through many hours of slowly growing familiarity.

Under the Roman domination Greek architecture remained the accepted type of perfection, and even in those buildings in which the construction was radically non-Greek, the orders, Ionic and Corinthian, remained the chief decorative feature. Still more, then, in those



202—Plan of the Acropolis of Athens. A, gate in the mediæval fortified wall; B, ancient entrance for beasts of burden and processions; outer hexastyle portico; C, inner hexastyle portico; D, temple of Athena Nike; E, west front of Parthenon; F, east or principal front of Parthenon; G, east porch of Erechtheion; H, north porch of Erechtheion; I, Portico of the Maidens; K, vestige of a Roman temple; L, sacred enclosure of Artemis Brauronia; M, traces of ancient temple of Athena; N, platform of uncertain purpose; O, site of Acropolis Museum. (Drawn by F. C. K. from several authorities.)

buildings which were entirely of trabeated construction, was Greek influence to be seen. This Greek influence was not sufficient, however, to maintain the proportions, the style of sculptured ornaments, and the like, in the greater structures of the Empire; but there are a few instances of buildings which differ from the Greek work of four centuries earlier only in minute details. Thus, at Athens the gate of the Agora, built about 10 B.C. (see Fig. 203), would be indeed a poor example to take for the study of the great Doric style; and yet it is a most interesting and attractive portico, and the differences between its artistic character and that of the Theseion or of the Propylaia are chiefly in the size and curve of the echinus, the depth and curvature of the channels, the exact shaping of the curious triglyphs, and the general system of proportion. The temple at Cori, among the ruins of the ancient Cora, in Italy, called temple of Hercules, is thought to

have been built as late as the time of Sulla, probably between 100 and 80 B.C. The distinction between the style of that temple and the style of the buildings of the Greek colonists 350 years earlier is obvious

203—Porch of the Agora, Athens. Grecian Doric of Roman imperial epoch. (From phot

and has been recognized by all writers on the subject; and yet it is necessary to distinguish this temple as a pure Greek design, as opposed to the designs showing strong Italian influence which dated from the same or from later periods.

BOOK IV.—THE ITALIAN PEOPLES BEFORE ROMAN CONTROL

CHAPTER I

WE have no trace of buildings which can be certainly ascribed to the earlier races of Italy—Oscans, Umbrians, Lucanians, and others named by Latin writers. The Oscans must have occupied the greater part of central Italy. Their dialect remains for us in certain graffiti and even less rude inscriptions, and this language has been declared probably more easy to interpret than the Etruscan language has proved. As the Greeks in the far south of Italy at a very early time replaced all local civilizations by their own, so the Etruscans, coming from Asia or from the north and taking possession of central Italy from the Tiber northward nearly to the Po, established their own system, also to the exclusion and the destruction of whatever had preceded it. As regards architectural works, therefore, we have to reckon with the Greeks in the south, as shown in Book III, with the Etruscans in the north, and with no other race until the Latins, headed by the growing community of Rome, began to develop that mixed style which we call Roman and which is considered in Book V.

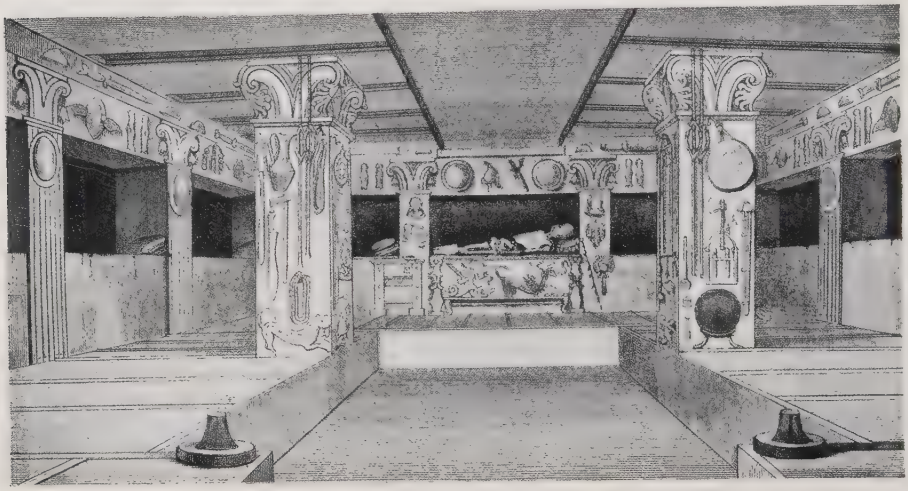
204—Gateway at S. M. di Falleri, thought to be of the fortified wall of the Etruscan town of Fallerii. (From Dennis.)

Even of the Etruscan architecture we have but few and insufficient remains. We cannot build up even a fairly reasonable theory of the Etruscan way of designing a decorative building—of creating architecture in the true sense. Fig. 204 shows that city gate of the ancient town, Novi Falerii, which is called by the Italians of to-day Porta di Giove. Fig. 205 is the so-called Porta dell' Arco at Volterra, the ancient Volaterræ. Such slight vestiges as these are all that remain to us of Etruscan fortified walls; and we have no other material from which to judge of their way of building a palace, a residence of size and importance, or a public building of civic destination. There is indeed the more elaborate gateway at Perugia, called Porta d'Augusto, and this is remarkable in having the archway pierced through the thick wall diagonally —a skew arch—but the Etruscan conception of this cannot be separated from the design of the Roman engineers, though the gate is often reproduced as Tuscan work. We know enough to accept it as a familiar theory that the Etruscans were the only people of great antiquity who used as a part of monumental design the constructional arch, the arch made up of wedge-shaped solids. This constructional arch was so familiar to them and so generally ignored by other nations, except for small drains and conduits, that the famous sewer at Rome, Cloaca Maxima, is accepted without argument as of the period marked by the supremacy of Etruscan kings in Rome. This sewer, however, is not a work of careful engineering. It is an old water-course stoned up with retaining walls as the city grew up out of its constituent villages, and

205—Gateway at Volterra, thought to be of the Etruscan fortified wall of Volaterræ. (From Martha.)

afterward arched over; its course as laid down on a careful map is curiously irregular. This final vaulting was done in a thorough way, with three successive rings of a rollock arch, wherever it has been examined.

The Etruscans knew also the flat arch, that is to say, a seeming lintel or stone beam built of voussoirs and acting in all respects as a

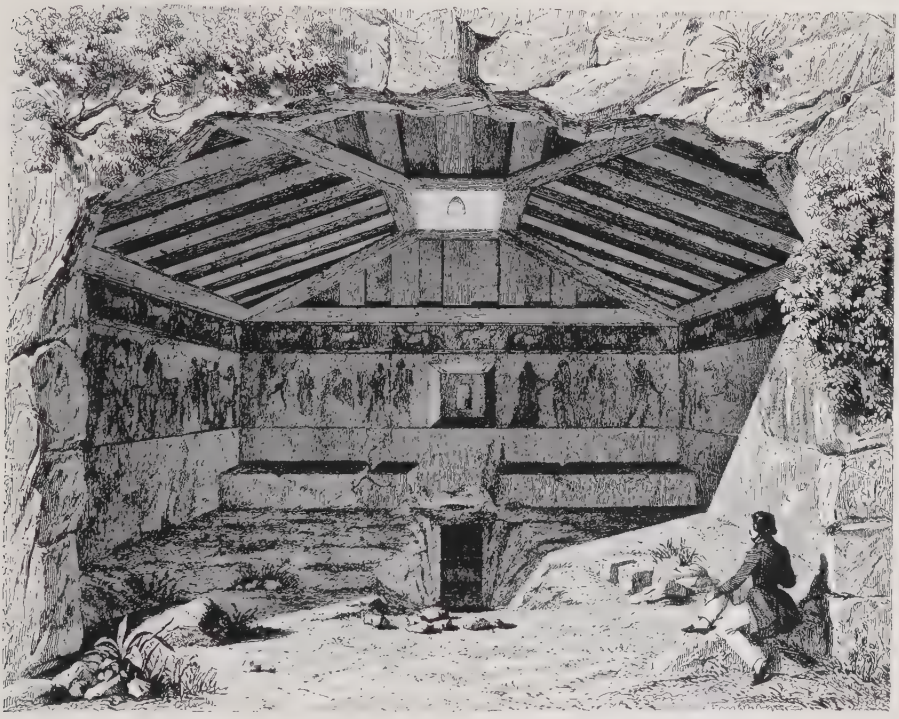


206—Tomb called "of the Reliefs" at Cervetri, north-west of Rome. (From Dennis.)

constructional arch. Figs. 212 and 212 A show the use of this piece of construction in Roman columnar architecture, and better than any Etruscan ruin can present it; but there are instances enough of its use from early times. The gateway of the ancient theatre at Ferento (Ferentinum of the Romans), although the round arches are undoubtedly of later date, vestiges of Roman restoration or repair, has a flat arch over the actual gateway which may be accepted as of pre-Roman work. It can hardly be doubted that the Roman Imperial architecture, in its use of these two forms of the arch, was directly indebted to the Etruscan builders.

Much the most common form for us of Etruscan monumental work is the tomb; and the tombs which remain in the modern Tuscany and Umbria are either rock-cut, artificial caves, or tumuli. Of the first class there are many in the neighbourhood of Chiusi, the ancient Clusium; others near Corneto, near Vulci, Perugia, and Cervetri. Fig. 206 shows the interior of a tomb at Cervetri (the ancient Cære), the most richly decorated Etruscan tomb that is known to us, but

small in scale. It has a flat roof which is carved as if in imitation of beams or heavy planks. The so-called tomb of the Tarquins, also at Cervetri, has the roof sloping on either side toward a broad central flat which may be thought to stand for a huge girder replacing the ridge-pole. Other Etruscan rock-hewn tombs have an even more marked imitative character, as if studied directly from carpenter work. Thus a tomb at Corneto is shown in Fig. 206 A; the roof sloping upward on four sides to the open shaft or well, above: and the semblance of huge rafters, wall plates, and a curb at the central opening perfectly carried out. This tomb is shown also in Fig. 206 B, in section. The com-

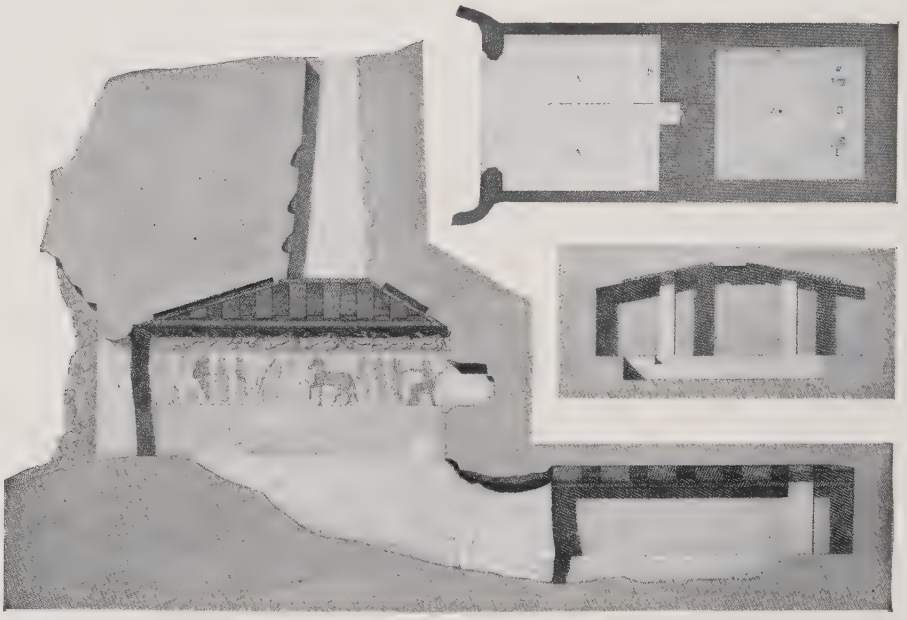


206 A—Etruscan tomb at Corneto. (From Gailh., Monuments.)

pleteness of the two separate chambers is so marked that this tomb has been named in the plural—the Two Superimposed Tombs.

The tumuli are not unlike those of vastly greater size and splendour in the Peninsula of India. Thus the famous mound called La Cucumella near Vulci, was circular, about 200 feet in diameter, and surrounded by a wall of solid masonry thought to have been at least 12 feet high. The conical mound of earth and loose stones must have

risen to a height of 75 feet or more in the centre. We find this same form carried out with more elaboration in North Africa, as in the circular structures roofed with conical piles of steps, and called Tomb of Juba II, Tomb of Massinissa: again with more solidity, especially in Asia Minor, with a skeleton of masonry construction in the so-called



206 B—Etruscan tomb (see Fig. 206 A: plan and sections). (From Gailh., Monuments.)

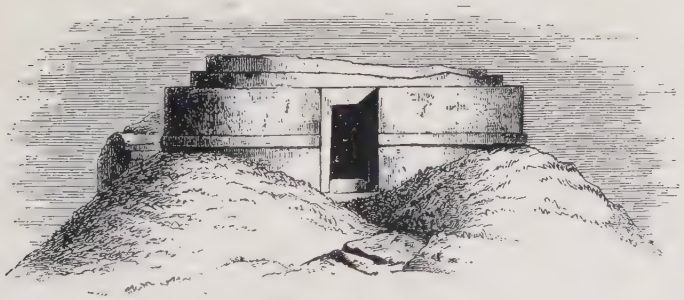
tomb of Tantalus near Smyrna, and on a vastly greater scale in the tumulus of Augustus in Rome (see Book V).

The same form, but this produced in a very different manner, is seen in a rock-cut tomb near Bieda, the ancient Blera, south of Viterbo. Those who planned this tomb had in mind at once the underground rock-cut cave and the tumulus which marks its entrance. A hillock of native rock has been dressed and rounded, and the lower ring, where the rock leaves the surrounding soil, is cut into steps.

A still more elaborately wrought surface tomb is near Castel d'Asso (see Fig. 207). In the case of these tombs, the uppermost surface is in doubt, having been weather-worn and injured by man. It is altogether probable that each one of them supported either a pyramid-like superstructure or a tower, or perhaps a stone-carved figure of man or beast.

The tomb of Lars Porsena described by Pliny (H. N. xxxvi,

19, 4), who quoted a lost work of Varro, has been considered a doubtful and even an imaginary building, but this mainly on account of its assumedly exaggerated size and importance. There is, however, evidence that tombs similar in style to Pliny's description existed, and a memorial of a great and predominant Etruscan prince may well have been all that the description makes it. The form, too, namely, the use of a round tower, corresponds with the tomb at Castel d'Asso described above, and with the much larger tower which once rose on the hills which lie between Corneto and the sea, as described by Mr. George Dennis in the book frequently cited here. The most important assistance to the understanding of Pliny's description is in the remarkable tomb at Vulci, La Cucumella, named above. When this was opened by Joseph Bonaparte, Prince of Canino, there were found in the heart of the tumulus two towers of solid masonry, more properly to be described as pedestals, because one of them seems to have been absolutely a solid mass, and the other without a practicable interior. They were probably meant to support whatever statue, group, carved lion or other beast, or perhaps pyramidal or conical mass which



207—Tomb cut from undisturbed rock at Castel d'Asso near Viterbo. (From Dennis.)

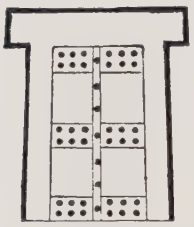
would be intended to show above the finished top of the earthen mound.

The early Roman tomb near Albano, formed of a square podium carrying five conical towers, is almost certainly a copy of a lost memorial of the Etruscans.

Columnar architecture among the Etruscans is so confused by the lack of accurate dates, and by the fact that it was evidently borrowed from Greek sources, that its study becomes impracticable. In the larger work by Mr. Jules Martha[1] there have been some pains

[1] L'Art Étrusque, Paris, 1889.

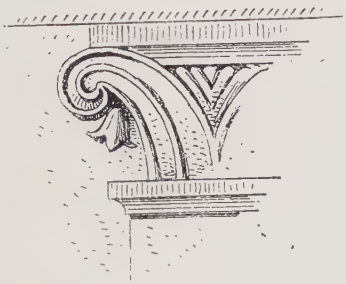
taken to compare the forms of Etruscan columns found among the tombs at Vulci, at Orvieto, and elsewhere, and the very curious use of a round tapering shaft with a very spreading capital, distinctly resembling a Grecian Doric echinus, shows how columns must have been used freely to carry the roofs of large chambers. The instances are few and do not connect easily one with another; and the pilasters, round or square, which are the most elaborately adorned with moulded capitals and bases and often fluted shafts, are also those which resemble most nearly the Doric of the Greeks or the earliest Doric of the Romans. It is evident that the two orders in Roman architecture (for which see Book V), the Doric and the Tuscan, are modifications by later architects of the very crude attempts of the Etruscans to adapt the Grecian order to their own use.



208—Painted representation of doorway and doors in tomb at Corneto. (From Martha.)

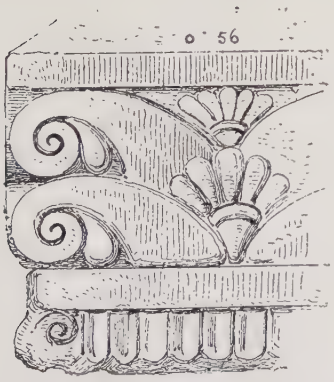
In what has been said above of the true arch made up of wedge-shaped solids as more freely used in Tuscan work than elsewhere in antiquity, it must be added that the Etruscans used also the pseudo-arch made up of corbelling, in all respects like that known to us as of Egypt and the archaic styles of Greece. Figs. 84, 85, and 86 will serve equally well for illustrations of these Etruscan methods. There is another constructional device familiar to the Etruscans, the building of square-headed doorways with jambs sloping toward one another in such a fashion as to diminish the length of the lintel which takes the superincumbent weight. This form, also, was familiar to the Greeks, but we find it more frequently in the buildings of the classical time, and in connection with a more developed style of art. The Etruscans used a device familiar to us in the later practice of the Romans, who adorned in this way the casing or stone framing of their doorways; thus Fig. 208 is a painted doorway in a tomb at Corneto. This example is selected because it shows at once the different tendencies at work —the sloping jambs, the stone of the lintel cut longer than required for the width of the door, and these two forms together accepted as giving a certain decorative effect. In rock-cut fronts of tombs these same forms are repeated or imitated, and sometimes with extraordinary clumsiness of design. It is necessary to state that all we have of pure Etruscan art, sculpture, mural painting, the forms of bronze ornaments, jewelry, and the like, gives us the idea of a race having but

little controlling good taste. Energy, a desire for brilliant ornamentation, the willingness to spend money and time upon it, all are evident enough; but there are few signs of that refinement of feeling which forces itself upon our notice most strongly in Greece, but is recognizable also in the work of Assyria and Persia in early times; and still more forcibly, because on so great a scale, in the varied monuments of Egyptian art.



209—Capital in tomb at Cervetri. (From Hdbch. Etr. und Röm.)

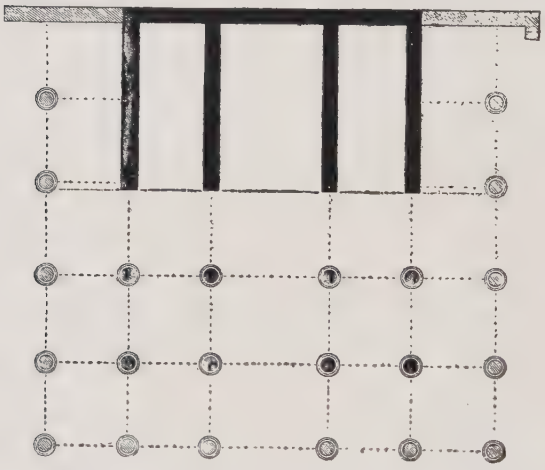
The archæological journals, the publications of the Institute, many special studies devoted to certain localities in Italy, have published details of uncertain date; capitals of columns which are not of any recognized Grecian or Greco-Roman order, bases of columns still more irregular in their design, sculptured stones forming parts of archivolts and lintels and similar decorative adjuncts of stone buildings. Almost universally, however, these pieces seem to be controlled by a Greco-Roman, and therefore a later influence. And yet they are not Greco-Roman, neither in exactness of detail nor in the inherent character of the design. Thus, Fig. 209 gives the capital of a pilaster at Cære, and Fig. 210 is another from the Etruscan museum in Florence; and in each of these is seen something of that wish to combine leafage with the volute, which led to the Corinthian and later to the Roman Composite style.



210—Capital of pilaster in Etruscan Museum, Florence. (From Hdbch. Etr. und Röm.)

According to Vitruvius (Book III, 3) the Etruscan temple was of a recognized type. Indeed, Vitruvius allows of no other style of temple among the pre-Roman Italians; but he is not a careful writer, nor one who is concerned with the exactness of his record. He assumes that the columns are of stone, and that upon the four columns which form the portico there shall be two heavy timbers side by side, the two together as wide (or thick) as the top of the column. He tells how these timbers are to be held together, with an air space between them to keep them from decay. Upon these timbers

he sets up a triangular wall (the tympanum of the pediment) either of masonry or of wood-work, and the roof is projected beyond this wall as much as one-quarter of the height of the column. Then the different members of the wooden roof, the rafters, the purlins, and finally the roofing and the tiles, are to be brought together, and the roof so framed that its pitch shall be one to three. In another place he says that the cella is of three parts, having three chambers side by side and dedicated to three divinities; but whether he means to say that every temple was divided among three divine personages or not, we may well doubt. The plan of his Etruscan temple, then, is, as in Fig. 211, in the parts shown black. It had long been accepted as a fact that the temple of Jupiter Capitolinus in Rome was such an Etruscan temple, and this on the authority of certain coins of the Emperor Domitian and of the famous bas-relief in the Palace of the Conservators at Rome (Fig. 211 A). Later investigations have tended to confirm another theory, viz., that there were six columns in the front, and recent excavations on the Capitol have revealed, what was of evident probability, that the building as enlarged and adorned by one emperor, would present a different aspect from that which it had under another prince. Fig. 211 shows the Etruscan temple, and an outer colonnade of later Roman work, making a hexastyle temple out of a tetrastyle, but leaving the triple cella unaltered.



211—Temple of Jupiter Capitolinus at Rome. Conjectural restoration of plan. The temple is assumed to have been tetrastyle with three cellæ, and to have had a peristyle added later. (From Martha.)

For the purpose of this work the complete settlement of Italy under the Roman power may be put at 200 B.C., the year after the close of the second Punic War, and four years after the expulsion of Hannibal from Italy. From that time on, Italy from Calabria and Brutium on the south, nearly to the southern slope of the Alps, was subject to the power of Rome, so that the controlling State was em-

powered to call out her soldiers from all the cities of the Peninsula and of upper Italy—even of Cisalpine Gaul, which we now call Liguria, Piedmont, and Lombardy. From this time on, all the arts of Italy are to be considered under the head of Roman art, and it is with that date that our Book V begins. Now, it does not appear certain, or even probable, that any of the interesting columnar and other architectural details which are considered in the pages of

211 A—Sculptured representation of the Temple of Jupiter Capitolinus at Rome. From a bas-relief once belonging to the destroyed Arch of Marcus Aurelius, near S. Martino, on the Via di Marforio, north of the Forum; now in Palazzo dei Conservatori. The sculptures of the pediment have been represented with some care. The temple was hexastyle at one time, but it is probable that this came from an added peristyle (see Fig. 211). (From photo.)

Book V are of Italian nationality other than as may be properly described as Roman. They are all Grecian in the last analysis; and if, by chance, this Grecian influence came almost direct to their designers, as must have been the case in the far south, that fact merely suffices to take the design in question out of the subject treated in Book V and to relegate it to Book III, in which chapter the direct Greek influence over the south of Italy is discussed at length. The architecture of the earlier races of Italy does not exist for us except in such fragments as are described above. The buildings of the south of Italy are treated as parts of that architecture which spread from the coast of Asia to Sicily with equal purity and equal vigour in the colonies and the mother country.

The architecture of the city and city-state of Rome can only be

pictured as an inference from what little we know of Etruscan architecture, together with the very slight traces of early buildings of the Republic which have been found in recent excavations. The opinion which has taken shape among the excellent archæologists who have made the city of Rome their special study is that the buildings were generally of brick and adorned very freely with terra-cotta mouldings, panels, and even sculptured figures. It is also clear that this terra-cotta decoration was commonly polychromatic.

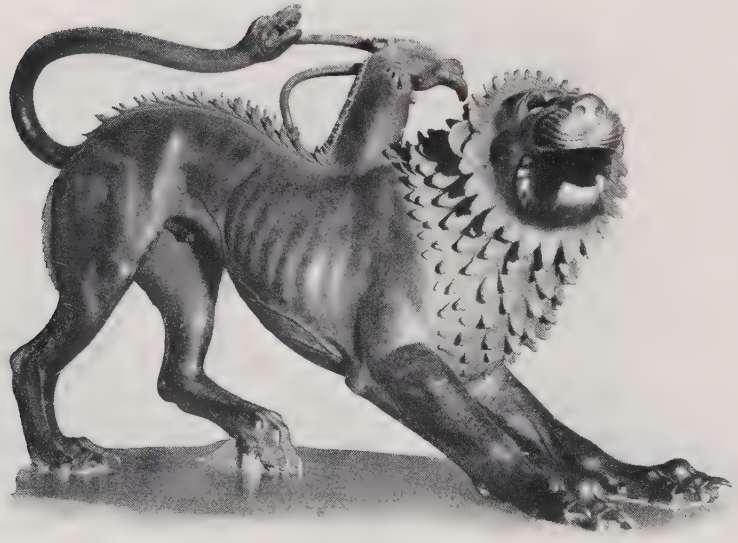
The bricks used for ordinary house building were sun-dried only, in the majority of cases, until the city had grown so compact that it was cheaper to build the thinner walls which could be secured by using fired brick. Moreover the facility of making hard-baked terra cotta would lead instinctively toward a greater use of fired brick. We are not to understand by this term the admirable hard-baked tiles (as we would call them in modern times) which face the heavy walls of the Imperial epoch, as stated in Book V. The bricks of early time that have been found are of different sizes and of far from perfect manufacture. These dwelling-houses might be, without impropriety, of the slight construction named, because they were so simple, with such low walls and so devoid of architectural pretension. The old type of the Roman house was this—a vestibule led directly into the atrium, which was generally a square room open to the sky in the middle—not merely a court, because of the partial roof and of the many purposes to which the room was put. Thus, if the atrium were about 20 feet square, much more than half of that space of 400 square feet was covered by an inward-sloping roof on four sides, leaving in the middle an open space of about 50 square feet, the compluvium. From the edge of that roof the rain-water dripped into the tank below, the impluvium, around which were ranged perhaps a few plants, a family altar, and this or that treasured ornament. The strange traditions of early times, as that the conjugal bed was always placed in the atrium, points to the fact that this was considered the chief room of the house. It was the eating room, and probably the kitchen also in the humbler dwellings. The next step was easy to take, and every citizen who had a little spare income would enlarge his house by adding a separate eating room, that which was afterward called the tablinum, and also by an improvement in the size and quality of the small cubicula or bedrooms opening on the atrium, so that this largest and most open room became more and more a gathering place and the

sitting room of the family, as in modern times the single kitchen has developed into living rooms and parlours of all sorts. Still, the house consisted of one story, with few, if any, rooms for which a staircase was needed. There were no windows in the outer walls except where there was a shop built into the body of the house, as explained in treating of the remains of Herculaneum and Pompeii in Book V.

The temples of Republican Rome seem to have been of the Etruscan type, as explained in this book. The city walls, of which large fragments remain, were built of great blocks of tufa—the soft sandstone, partly made up of volcanic ash, which was always the material most readily at hand, easier to quarry and easier to hew than the harder stones of later times, travertino and peperino, according to the modern Italian names. In like manner there are some traces of public edifices built of that same stone. The building known as the Tabularium is certainly of the Republican epoch in its lower story, as seen from the Forum, and this is much the most important building left from the time of the Republic. From the north-western side, that is, from the modern square of the Campidoglio, this is not visible—that which we see behind the bronze statue of Marcus Aurelius is a building of the close of the sixteenth century, the so-called Palace of the Senator. From the Forum, however, the Republican building rises, story above story, to a great height, the steep declivity of the Capitoline Hill on that side being masked by this structure rising 100 feet or more from the temple of Vespasian at its foot. A structure of heavy blocks of stone is found on the south-eastern peak of the Capitoline Hill, under and close by the Palazzo Caffarelli, which is now the German Embassy. It is thought that this palace occupies nearly the site of the ancient temple of Jupiter Capitolinus, and that the heavy tufa stone masonry alluded to is a part of the ancient platform which supported it—the substructure necessary to level up the base of the building by bringing its rounded forms to a horizontal floor.

It has been noted that the famous saying attributed by Suetonius to the first emperor, that he had found Rome of brick and left it of marble, was more than a mere assertion that he had increased its magnificence. The old city of Rome, the Rome of the Scipios and of the Triumvirate, was a low-browed, simple town of brick houses without much pretension; with temples built chiefly of timber, with columns only of stone, and with nothing in the way of stone walls and vaulting

except in connection with one or two public buildings—a town immeasurably inferior in splendour and architectural display to the cities of the semi-Greek East, Asia Minor, Syria, and the coast of Egypt. Augustus, as master of the Roman world, that is, of nearly all the Mediterranean lands, began in earnest the task of giving to the capital of the world some of the magnificence of her subject cities.



Chimæra of late Etruscan or Romano-Etruscan work. Found at Arezzo in 1552; now in the Etruscan Museum, Florence. (From photo.)

BOOK V.—ROMAN IMPERIAL ARCHITECTURE

CHAPTER I

THE COMPONENTS OF THE ART

THE city and the small state of Rome have been considered in Book IV. Improvements and enlargements of the simple scheme of building came slowly. We are told by Roman authors when the first marble columns appeared in a dwelling-house; when the first stone-built theatre was built; when the first basilica was added on the north to the public space of the Forum, beginning the vast city of Imperial basilicas and fora. As the art of the great building nations crowded upon the simple-minded people of middle Italy and filled their capital with foreign thoughts in architecture, so did this capital, acting as an exchange of thought, influence the world outside. Greece and the East pressed upon Rome, but Rome in return, while carrying over the art of Greece and of the East to the western and southern lands, influenced again those peoples which had most strongly acted upon the Italian imagination.

The different elements of all the architectures of the Mediterranean seem to have appeared in the Roman dominion at an earlier or a later date, with greater or with less fulness and abundance. Post-and-beam construction in its most highly developed form, columnar architecture, with the Ionic and Corinthian orders, had come from Greece, either directly or by the way of the colonies in the extreme south of Italy and in Sicily. The round arch of wedge-shaped solids, with such slight architectural details as it had given birth to (a structure and a method of design not familiar in other lands) had come in from the Etruscans in the north of Italy. There were other practices of building which modified Roman design, and chief of them a strange construction which has never been traced to its source. This is the building of walls and vaults in solid masonry with abundance of mortar made with lime and sand, or cement and sand—not mortar joints

merely, but what is called "the bath of mortar," with small stones bedded down into it, and with a facing of wall and vault alike either of hard-burned bricks or of small squared stones. This way of building may have come from the later Grecian work of Western Asia; it has been thought that the city of Alexandria, if thoroughly explored, even now, after all the changes which the low-lying site of that city has undergone, would still reveal the origin of that Roman building in mortar-masonry. See the treatment of this subject in Book II: it would not seem far from the Persian vaulting of the fourth century B.C. to that of the Pantheon.

The Etruscan arches built up of true voussoirs, and the Greek trabeated structure as combined with elaborate systems of proportion and of settled detail, were the two great factors which made up Imperial Roman design. The modifications resulting from solid mortar-building come late in the chronological sequence, not apparently earlier than 100 A.D., and do not change abruptly the accepted Roman system of design.

It is necessary to consider the way in which public buildings were undertaken in the great provinces of the Empire. The governor of a province, the proconsul in a quiet Romanized land, or the propretor or general commanding armies quartered in a land as yet imperfectly pacified, might himself desire to please his quasi subjects—the people of the provinces under his control—by showy buildings which, although their own property changing hands had gone to create them, were still an attraction to all the citizens and an added glory to one of their cities. In this way a great theatre would be built, or a stately temple dedicated to a local god; or a market-place would be laid out in the heart of a crowded town and a stately colonnade built around it; or a wholly new town or a new quarter of an ancient city would be founded with a similar display of forum, porticos, temples, and a theatre. It is often impossible for us to say whether the emperor or one of his great ministers was nominally the giver of these, or whether the local treasury paid for them obviously and directly. Such works as these would be designed, naturally, in the Imperial style, whatever that might be at the time, but modified by local feeling in one place more, in one place less, throughout the Mediterranean world. Syria and North Africa show greater diversity; Spain and Gaul a stricter style. Then, too, the stricter style is of the earlier years, and the serious changes which began to destroy the purely classical nature of Roman design are most

frequent after 200 A.D., or after the death of Septimius Severus in 211. But as, half the time, we do not know the dates of the buildings, except approximately, and as one and the same province shows different and not easily explicable changes in the spirit of design, it is necessary to treat of one leading style as lasting throughout the epoch of the Western Empire—from about 30 B.C. to 330 A.D.—and to point out its essential manifestations. Variations from this style are treated in discussing the art of the countries where such variations occur. The marked exceptions of Egyptian and Greek style are named in their own chronological connection (see Books I and III); but these are really holdovers of earlier national feeling, and of well-established and powerful architectural styles. There was nothing like those styles in Gaul or Spain, Africa or Britain. This Imperial style we have to consider under two chief headings, but each division, that of the arched buildings (Chapter II of this Book) and that of the trabeated buildings (Chapter III), is made up in part of incongruous elements, the frequent mixing of which elements creates the singular thing which we know as Roman architecture.

With the Roman rule there appear new requirements, and novelties in the purposes and the plans of buildings. There were buildings of a class never known before; and again others arranged for newly enlarged demands. There was the amphitheatre, for gladiatorial shows and fights, and for the slaughter of wild beasts. There was that refinement of the stadium called the circus, used for chariot racing chiefly. There were the great thermæ. There were the basilicas in which the Grecian stoa and the Roman court-room were combined. There were temples, now no longer the chief buildings of the town but sometimes superb structures with elaborate colonnaded enclosures. There was, also, the wholly novel device which we know as the memorial arch—a stately decorative structure, of which it is not safe to speak as the triumphal arch, for only a certain number of these arches were triumphal.

When a province like Africa (properly so called—the territory around Carthage), or Numidia, or Mauritania, was to have a building of public importance, the style would undoubtedly be founded upon the style then prevalent in the Imperial City and its neighbourhood (see Figs. 243, 248). Very much the same influence would be seen to control even more absolutely in Gaul and on the Rhine. In none of the provinces erected in those western lands of Europe or along

the north coast of Africa had there been any previously existing style of architecture strong enough to maintain itself. The Roman Imperial style, made up as described above, was taken up with eagerness by these provincials, and modified according to their needs or according to their mental capacity. What the Numidians and the Moors made of it is strange enough—a Roman structure adorned with details of unknown provenience. What the Gauls made of it is business-like and severe. But in Greece there was of course the immortal art of the past which could not be ignored, and which influenced the style of new buildings (see Fig. 203 and what is said of the Agora gate of Athens). This very same influence existed in southern Italy: as in the temple at Cori (described in Book III). In Egypt, the style which has been described at length in Book I had such vitality that far down the years of Roman predominance it held its sway unaltered, and even under Diocletian, at the beginning of the fourth century A.D., it was strong. The temples of Edfu and Denderah, given in Book I (see Figs. 37 to 42), are monuments of a time only just preceding that of Diocletian, and it was found necessary to continue the thread of Egyptian artistic history to the end, because there is nowhere the sign of any rupture in its continuity, and also because there was no tendency of the Egyptian style to appear elsewhere than on the banks of the Nile.

There still remain to be mentioned as a part of this Imperial architecture the developments of Western Asia. It is in Syria that these manifestations are the most remarkable. In spite of what traditions may have lingered on from Phœnician art and from the days of Assyrian supremacy, and in spite of the influences coming from the Greek tradition and from Persia—great cities of Syria were built up in a splendid ultra-Roman style, setting an example to the Imperial City itself. It seems to have been in Syria that the colonnaded streets first appeared. There, as in Italy and as in Grecian lands everywhere, the temples had been long surrounded by columned porches, facing inward toward the sacred enclosure. It seems to have been a development of this idea which drew out the long rows of Ionic columns in Gerasa (Fig. 279), and of Corinthian columns in Palmyra (Fig. 244). Then, again, the distribution of the great temples at Baalbek (see Fig. 305), and their huge courts of approach, is Roman Imperial planning adapted to a more irregular site and more abrupt changes of level; and a not unfitting addition was made to Roman splendour in the retention or revival at Baalbek of the use of enormous mate-

rials—gigantic stone blocks—a phase of Phœnician tradition peculiar to the people of Syria and the country back of it. For it does seem as if a land where there was nothing but sand and stone, where wood was almost unattainable, and where there were no beds of clay, had taught its inhabitants to excavate the living rock, and hence perhaps to revere the weight, the tenacity, of huge stones as being the most visible evidence of nature's abundance and strength. The people of no other land have shown the same love for monoliths of very great size.

Meantime, throughout the Empire, the private houses, the smaller public buildings of provincial towns, the baths and even the minor basilicas, were built very largely according to the same traditions; and when we trace the ruins of a country mansion in middle France, the materials and the disposition are not so startlingly unlike those used in Italy. Bricks and tiles, plaster and wood, are found to be used in one country as in another, with only such exceptions as in parts of Syria, where cut stone replaces them all. In this way there underlies the stately architecture of the Imperial system, a humbler private way of building, which unfortunately is but little studied and which it is very difficult to observe and to compare. The ruins of private houses are slight and perishable; they show but little architectural organization, and those few which have promised the most for the student have been destroyed very soon after their discovery as, notably, in the city of Rome. It has been the worse for our modern architecture, derived as it is mainly from Roman example, that we have had to study for our smaller buildings, public and private, only the grandiose style which the Romans used for the vast structures in which labour was not spared, and for which costly materials were supplied without stint.

CHAPTER II

THE ARCUATED BUILDINGS AND THE ITALIAN SPIRIT

THE Etruscan influence is found in the buildings of which the walls are of cut stone, the openings of door and window closed at top with arches made up of stone voussoirs, and which are often roofed with stone vaultings. Cut stone was used in antiquity where other materials were scanty, as we have noted in Egypt, or where a permanently monumental character of building was sought especially, as in Greece; but nowhere was the constructional arch used for architectural effect except among the Etruscans.

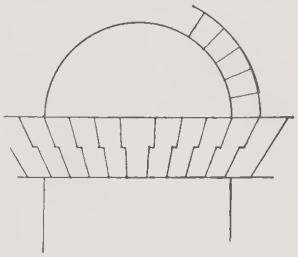
The ordinary "round arch," that is, an arch whose intrados and extrados are laid out on concentric circles, is very familiar to all persons who notice buildings. Such arches are shown in Figs. 204 and 205, and in many of the illustrations in the present Book. There was also in common use among the Etruscans, and among the Romans as well, the "flat arch," that is, a member horizontal at top and bottom, and resembling in all respects a lintel, but made up of voussoirs or wedge-shaped solids acting one upon another, exactly as in the case of a round arch. It would not be hard to find examples of Etruscan work of this kind in connection with city walls and ruined theatres, and early and undated Roman work offers many such examples. There are some such flat arches in the Colosseum; and indeed wherever there is need of saving vertical space and wherever this consideration becomes more important than the economical use of material, that flat arch will be in demand.

Fig. 212 shows the architrave of a small colonnade at Pompeii, in which the order is that mongrel "Tuscan" or, rather, simplified Doric, of which there is discussion in Chapter III. The epistyle itself is cut with horizontal mouldings upon it in such a way as to give it the semblance of architrave and frieze at once. Nothing but the

cornice, therefore, is needed to make the entablature complete. The reason for this resort to somewhat larger stones and the more expensive cutting of the two architectural members in one, is the necessity of getting a member of considerable height, and in this way of giving

212—Architrave and frieze in one piece, built as a flat arch, at Pompeii. (From Hdbch.—Etr. und Röm.)

to the voussoirs a vertical dimension great enough to give them a strong hold upon the abutments which support them and take their thrust. For, as the reader will understand, the stone which bears the letters LESACER acting as a wedge and trying to fall through to the ground, thrusts horizontally, or nearly so, against the two abutment stones which rest upon the capitals, the whole simple structure forming as perfect an arch as if there were a ring of twenty voussoirs. Some of the great temples in Rome and elsewhere have the long span between the columns treated in this way with five, or even seven, voussoirs, thus tending to prevent the fracture of too long a single stone. When these flat arches become unusually long, as having to span broad openings, there is sometimes used the peculiar construction shown in Fig. 212A, where each voussoir is helped to keep its exact place in the horizontal band by a check or step which rests flat upon the voussoir adjoining and prevents the slight movement which might easily take place in such an arch. In Fig. 212A the span between the vertical supports is about 15 feet 6 inches, and it is evi-



212A—Flat arch, serving as lintel beneath a discharging arch—Theatre of Orange. (From Hdbch. — Etr. und Röm.)

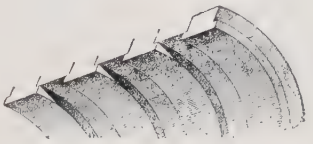
dent that even a very heavy and deep lintel would be in danger of breaking whenever the slightest uneven settlement should arise.

Fig. 213 shows the interior of a hall at Nîmes (Gard), in southern France, a building known as the Nymphæum or Temple of the Nymphs, though apparently there is not sufficient evidence for the title. The vault is a series of arches of solid stone, entirely of cut

213—Building called Temple of Diana, or Temple of the Nymphs, Nîmes (Gard). (From photo.)

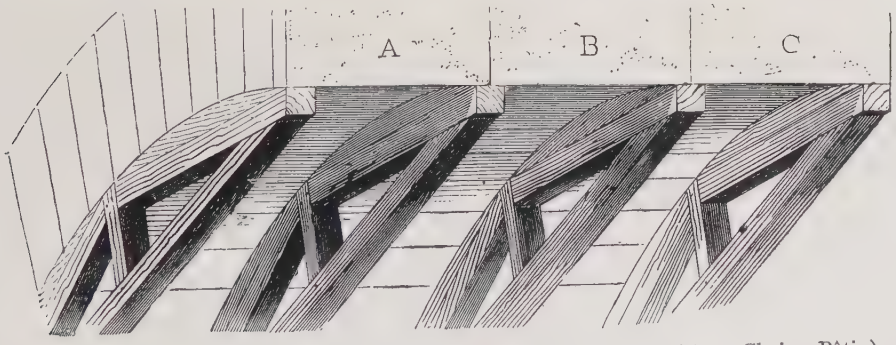
blocks. The intrados of each arch is made by the inner faces of the voussoirs, all of which voussoirs are perfectly cut wedge-shaped solids, like those used to-day in a stone arch for the doorway of a fortress or similar massive building. The singular alternation of smaller and larger arches in the generally semicylindrical form of this roof is explained by a desire on the part of the builders to save in the matter of wooden centring. They were evidently desirous of building only one centre, a single wooden arch three feet wide or less, as large as the whole span of the vault in one of its smaller rings, or, in place

of that, two or three slender frames like those shown in Fig. 215. Such a centre made and put up, would be used for the erection of a single one of those smaller rings. It would be shifted; another one of the smaller rings would be built; it would be shifted again, and so on. Then a larger ring would be built upon the smaller rings as upon a permanent centring. Fig. 214 shows this system in detail; though it is not asserted that in every case there was used the same cutting of the smaller rings with a flange, to take the stones of the larger rings.



214—Detail of tunnel vault of cut stone. (From Eu. A.)

The vaults of bridges were frequently built in this way, and the curious barred look of those vaults as a boat passes under them has always caused great interest and some wonder. Again, some bridges and viaducts have been built with the vaults in equal and adjacent strips, a series of vaults three or four feet wide closely in contact, and making up together the full width of the bridge. There can be no doubt that its origin is in the attempt to save wood and carpenter work. Fig. 215 shows how such separately built rings might have been carried up with only two slender centres—or with three; each centre being "struck" as soon as the masonry had set and it could be moved and shifted over to carry the next member of the

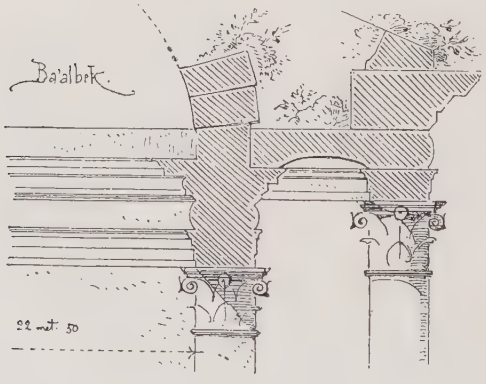


215—Use of light guiding frames as centring in cut-stone vaulting. (From Choisy, Bâtir.)

vault. And yet it resulted in a very important architectural invention. If, in Fig. 213, we look on the barrel vault, not as a continuous shell, but as a series of broad arches carrying slightly larger rounded roofs upon the backs of their voussoirs, then we shall see that each one of those smaller arches is in itself one of the primary features of

the structure. Looking at it analytically in this way, we notice six arches, each about 3 feet 6 inches wide and forming one rib of the vaulted roof. What, then, more natural than to support each one of these ribs by itself, putting in a column on each side? In that way the great rib would seem to spring from a column on the right and a column on the left, and the structure of the vault would in this way be carried to the floor. We may compare this with the vaulting-shafts of Gothic churches.

The much-ruined Nymphæum of Nîmes shown in Fig. 213 has a continuous entablature from which springs the whole vault, both primary and secondary bands of voussoirs, and it has retained two or three of the columns, which seem to carry that entablature. It has also two aisles or passageways, one on either side of the vaulted hall, the stone roofs of which aisles take up the thrust of the arches. This treatment of the supports of the vault is so far illogical that a continuous resistance is provided for a not uniformly distributed weight and thrust. A far more elaborate and more interesting architectural thought was carried out in such vaulted interiors as that at Baalbek, in the smaller of the two great temples, where the supports which carry the ribs are magnificent Corinthian engaged columns with highly wrought capitals, and the entablature above them, no longer continuous as at Nîmes, breaks out into ressauts alternating with recessed passages: see Fig. 216. Each rib of the roof springs from two of these ressauts, one at either side of the great hall and each resting upon a Corinthian pillar. Then the wall between these columns is occupied by niches, intended for statues or trophies of arms or other non-constructive decorations.

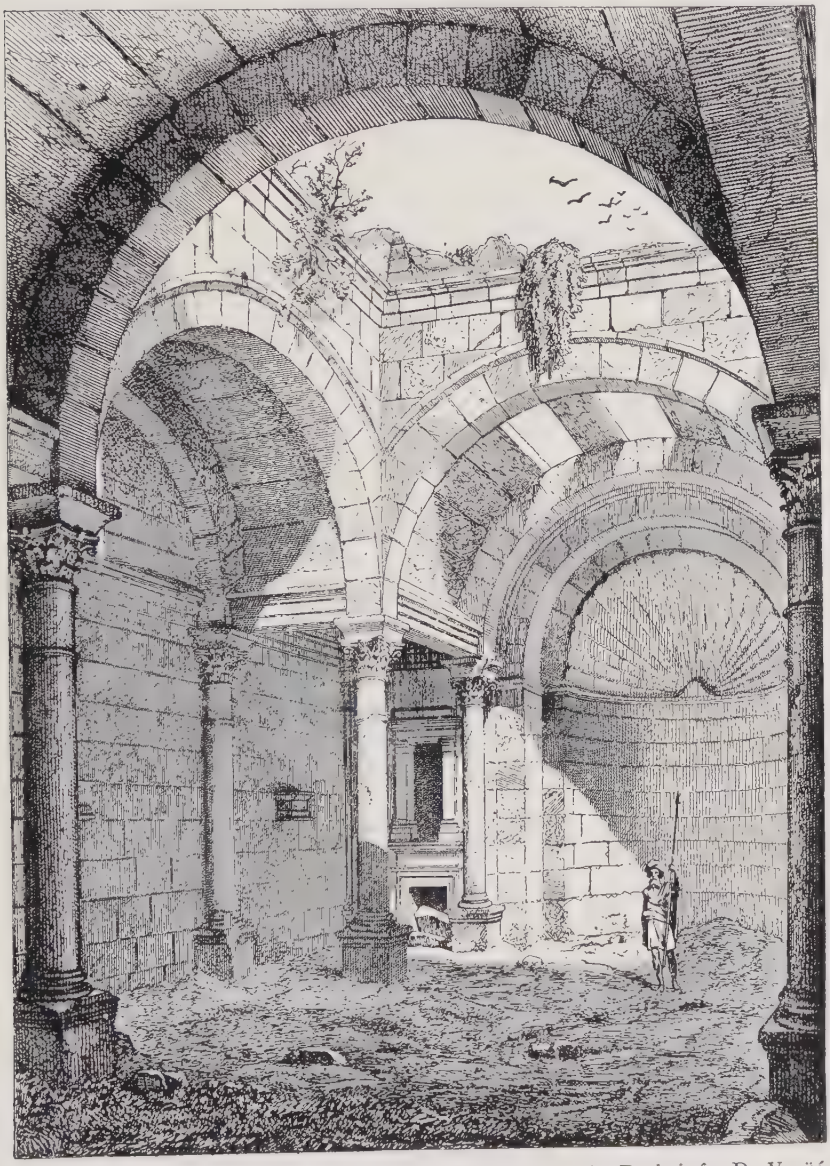


217—System of vaulting and buttressing, smaller temple at Baalbek. (From Hdbch.—Etr. und Röm.)

The span of this vault at Baalbek is of about 70 feet; and the necessary thrust of so great an arched structure could be resisted only by a great weight piled up at the abutment and the haunch of the arch, and extending out horizontally beyond its impost. Fig. 217 shows

216—Interior of the smaller temple at Baalbek, Syria. (From photo.)

this system as adopted at Baalbek. The inner row of columns is built solid together with the wall, and this heavy screen carries the



218—Interior of the Pretorium at Musmiyeh, Syria. Drawn by Duthoit for De Vogüé. (From Eu. A.)

vertical weight of the stone roof. A heavy stone ceiling covers the pteroma, and serves also to connect this impost with the superstructure of the outer row of columns. Now when the massive stone

cornice of this outer colonnade is used to maintain and enclose an enormous mass of heavy masonry piled upon the stone ceiling of the pteroma, as indicated in Fig. 217, that weight might suffice to maintain the stone vault within.

In the stony tract of Syria which lies east of the Jordan, the early traditions of shaping everything out of dressed blocks of stone continued into the time of the great empire. Fig. 218 shows the Roman system of design as applied to the structure most common in these regions—where the buildings had to be small and relatively inexpensive, and where a hard and durable stone was the only material available. This building at Musmiyeh is of the time of the Antonines, with vaulting somewhat later in date, and yet it has all the character of a system which rejected Grecian design, and that modification of it shown in the "Roman Order," as described below. The ground plan is a rectangle with a semicircular apse projecting at one side and with the door opposite this; but four columns stand out in the area of the rectangle and eight others are closely backed by the wall, or actually engaged in the wall. This is because it was proposed that the plan at the level of the capital of these columns should be cruciform with the central square, where the arms of the cross meet, carried up into a square dome-like roof—probably a cloister vault. The construction is clearly seen from the engraving, which gives the arches spanning the arms of the cross, the slabs of stone resting upon those arches and forming the actual roofs, the lintels which carry those tunnel vaults at their springing-lines above the capitals of the columns, and the wall of stone blocks rising above these arches and prepared to carry the cupola. All this is of dry stone masonry without mortar.

219—Ruined superstructure of tomb, ruins of Apamea, Syria. (From photo.)

Fig. 219 shows the remains of a building among the ruins of

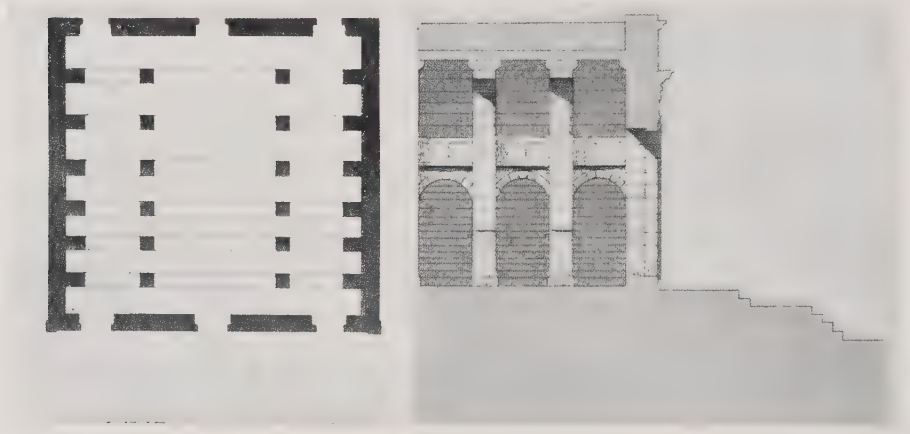
Apamea,[1] in northern Syria, southwest of Haleb (Aleppo). It is given here in order that the structure, entirely of dressed blocks of stone, without mortar, may be rightly understood. Such building is almost unknown in modern times; vaulting in stone blocks being confined to sea-coast fortifications and the like, and even there having the stones laid in mortar, without which modern stone-setters do not work. In ancient times, down to the fall of the Western Empire, mortar in the modern sense was unknown in cut-stone building.

220—The Trilithon, Baalbek, Syria. (From photo.)

The use of very large blocks is not at all a necessary part of the design in cut-stone masonry. The Romans cared little for the magnitude of the separate stones, and used such sizes as were most convenient to raise from the ground and then lower into place upon the wall. The engines which they used in ordinary building were sufficient for the handling of stones weighing as much as four hundred pounds, and those they used with perfect freedom. To find a use, in Roman work, of very large blocks, we must turn to Syria and to those parts of Western Asia as had felt the Phœnician influence, as mentioned in Chapter I of this book. Thus, in the substructure of the greater

[1] Ruins in the south of France or elsewhere would have served, except that the stone blocks lose their form and surface in a rainy climate and become unrecognizable, or are commonly recut or replaced.

temple at Baalbek, is found the famous trilithon shown in Fig. 220. of which the stones are given as respectively 62, 63½, and 64 feet in length. They are also 13 feet high, and their weight can be estimated by assuming that they are nearly as thick as they are deep or high, as it was not the custom at that epoch to use stones for mere facing, or what is called in modern times ashlar. These stones have been set upon a wall already 28 feet high above the site, part of which is now covered by new soil. Even if it were thought that these stones were



221—Basilica at Shakka, plan and longitudinal section. (From De Vogüé.)

placed where they are by Syrian builders before the Roman occupation, the use by the Roman builders in the time of the Antonines of enormous monolithic shafts, in the great temple which rises at Baalbek, above that huge sub-structure, would point to the influence exercised over the style by this strong local tradition.

A modification of the vault of dressed stone is found in Syria. Stone arches carrying stone walls are built in partitions across a large room, and slabs of stone are laid flat from one to another of these partitions, serving as upper floors and as roofs. One of the most remarkable of these buildings is the basilica at Shakka (Chaqqa), of which the plan is given in Fig. 221. There are six walls built across the hall, each wall pierced with three arches, the middle arch being much the largest. The distance between these transverse walls varies from 6 feet to 9 feet, approximately. The side arches are much lower than the middle arch, and above these is the gallery carried on arches which stretch from wall to wall, the whole length of the hall; then a second and still smaller arch rises above the lower one as seen

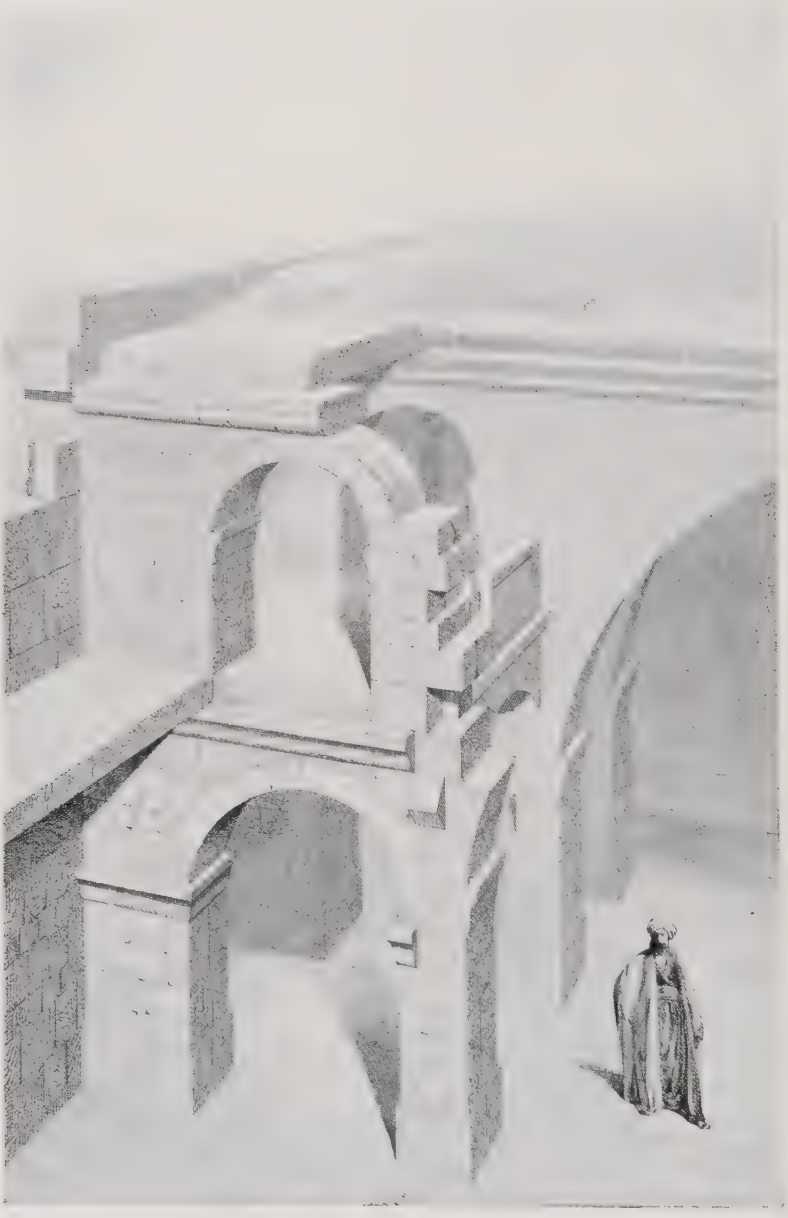
in the section, Fig. 222. The use of these cross-walls is to carry the roof, which consisted of slabs of stones which were then covered with clay or loam. In short, this is the perfection, the permanent treatment of a well-known device in Western Asia—the mud-covered flat roof. The accuracy of these restorations by Mr. Duthoit is confirmed by Mr. Howard Crosby Butler.[2]

Fig. 223, then, shows a perspective view of this interior, studied when the drawings by Mr. Duthoit were made, about 1870, and Fig. 224 gives a photograph made by the American expedition of 1899, showing a part of the north aisle looking west. This building is set down by the archæologists of both the French and American expeditions as of the second century A.D., and therefore under full Roman influence. A very similar building is the basilica of Tafha (Tafkha), also given by De Vogüé. This and the building at Shakka are insisted on here as being in complete contrast to the work at Baalbek, a place relatively near at hand, and in a region not dissimilar; the difference being mainly in the more settled and prosperous nature of

222—Basilica at Shakka, cross section. Width, inside, about 65 feet. (From De Vogüé.)

the country around Baalbek, with a large population and great prosperity at the time of the Roman supremacy—while the Houran, in which is situated the little modern village of Shakka, can never have been other than a thinly settled, barren land. That which is stately, that which is *grandiose* in classic art disappears when the builders and the community are poor in proportion to their needs; then there is found in control that logical and practical way of doing what needs

[2] Architecture and Other Arts, by Howard Crosby Butler, A.M.: Part II of the publications of an American Archæological expedition to Syria in 1899–1900. New York, 1903.



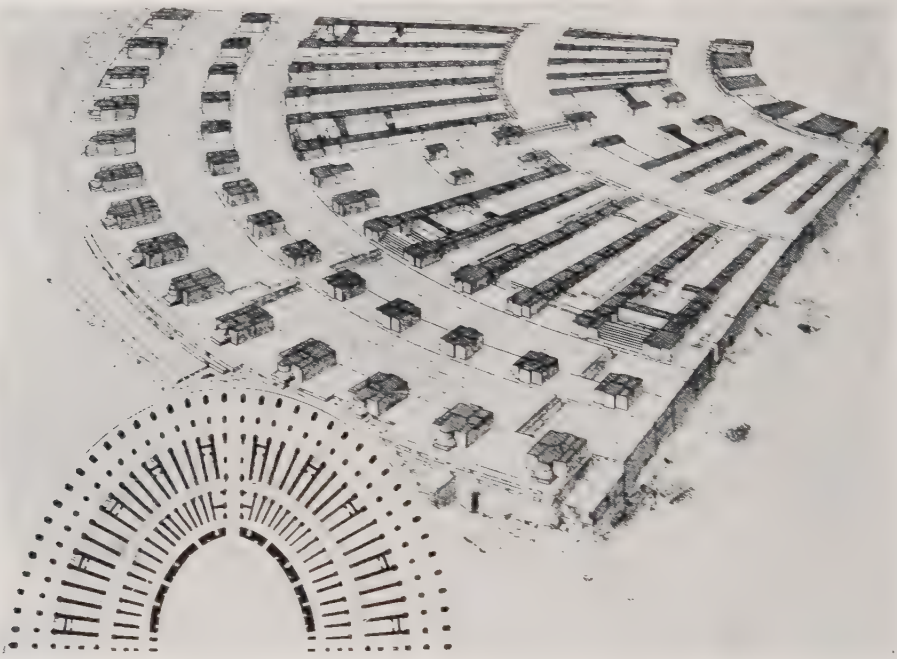
223—View of the Basilica at Shakka. (From De Vogüé.)

to be done which we find especially in the Romanesque architecture of Western Europe, for which see Volume II.

A much larger part of the cut-stone building of the Empire is found in connection with building of another sort, used for the interiors, while the stone walls and arches form the face toward the street and toward the great courts and corridors. Thus, if we consider one of the amphitheatres, like that at Verona, built of the red marble of the neighbourhood, that of Nîmes or of Arles in southern France, or the great monument at Rome called commonly the Colosseum, it is found that every part of the visible construction is of cut stone set dry, except always the vaults of the corridors and passages. The plan and a perspective view of a small part of the Colosseum, cut sectionally, are given in Fig. 225. A corridor forms the outermost ring of the immense ellipse, and immediately within it is a somewhat smaller corridor from which wedge-shaped passages lead toward the arena in the middle. The vaults above these wedge-shaped passages carry the stone seats and the passages of the upper stories. A conical vault rests upon each pair of walls and carries the stone superstructure. Now, this conical vault and the ring-shaped vault above the inner and that above the outer encircling corridor are of masonry built with mortar and small stones, nearly in the way described in Chapter IV; but the piers and the walls which carry these vaults are apparently of cut stone throughout. Take for instance one of the great piers of the outer ring, as shown in Fig. 225. Each horizontal course of stone consists of six blocks or sometimes of seven, of which the largest of all is that outside block, upon which the half-round is cut. These half-rounds coming one upon another form the shaft of the engaged column which ornaments the exterior of the ground story as explained below. Fig. 226 gives the exterior of four bays of the Colos-

224—View of the Basilica at Shakka, Syria. (From photo.)

seum, at least of the three original stories; and in this can be seen the effect of those wedge-shaped passages. They are like caves, dark and shadowy; and full advantage was taken of this by the designers, who placed statues upon the low parapet walls of the upper archways, where they would be relieved against the darkness within the two outer corridors. All that is seen in this photograph is cut

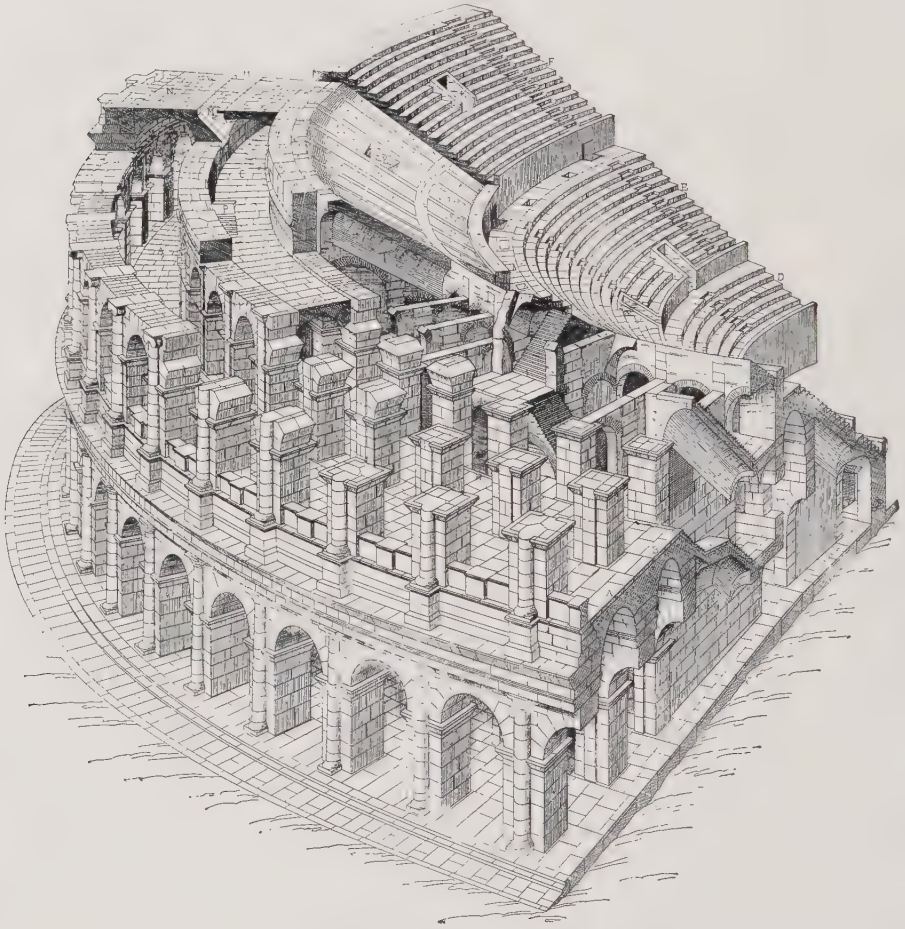


225.—Flavian Amphitheatre, Rome: study of ground story restoration, by J. Guadet.

stone, because the mortar-masonry vault does not come to the face of the outer wall, but is replaced for the outermost belt by cut-stone voussoirs which form the intrados of the vault. It will be noticed that these voussoirs are not of uniform size; at the intrados some of them measure about three feet along the curve, whereas others are of less than half that thickness. This was indifferent to the Roman designer, who was not considering the joints of his stones as a part of his design. He let the tails or outer ends of the voussoirs fit into the stone faces of the curved wall as might be most easy to the workmen who had the blocks in hand, and his archivolt was a continuous moulded band slightly raised above the wall surface, which wall surface consists of the outer face of the voussoirs and the stones of horizontal beds, together and equally. The entablatures also con-

226—Exterior of four bays of the Flavian Amphitheatre, Rome. (From photo.)

sist, in each case, of a stepped architrave, a small frieze, and a moulded cornice having dentils only in the third story, and these entablatures also are cut and set as part of the stone wall. The shafts of the engaged columns, as already explained, are part of the wall, having no independent existence, and so are the capitals, which are



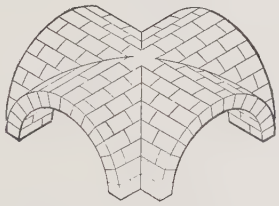
227—Flavian Amphitheatre: study of upper stories, Guadet's restoration.

Roman Doric in the ground story, a poor and thin Ionic in the second tier, and an effective type of Corinthian in the third tier. It is necessary to mention here what is explained more fully below—that this curious device of an apparent column carrying an apparent entablature, while the real work of the structure is done by deep and strong arches carried directly upon solid imposts, is, taken all together, what we call the Roman Order. It is the most characteristic single

feature of Roman architecture, the chief detail invented by the Roman builders, and in its complete negation of significance—its dependence upon splendour alone for its effectiveness—is eminently characteristic of this magnificent but not essentially artistic work.

Fig. 227 is a perspective drawing in which the building is supposed to be broken away below the second tier of arches in the foreground; to be broken away above those arches in the middle distance; and, at a still higher level, in the background, and in a similar fashion through the steps of the auditorium. The flights of stairs leading from story to story are shown as resting upon sloping vaults, and so is the masonry support of the steps as seen in *T*.

If the reader will look at the outer corridor where, at the right of the picture, the section of it shows below the letter *A*, he will see that the tunnel vault of this corridor is raised high above the arches of the exterior face and those which go from the outer to the inner corridor. On this account that tunnel vault is left continuous around the whole vast ellipse, and the arches of the arcades below pierce the solid wall of uniform thickness. If, now, we observe the vault beneath the corridor, *C*, in the upper story, we shall see that this vault, though apparently a continuous tunnel vault like that below *A*, is really of the same height, or nearly so, as the ring of arches which connects that corridor and the outer corridor which is indicated by *A* as to its pavement, and *N*, as to its roof. That means that these two vaults penetrate one another and form what is called a groined vault, the French *voûte d'arête* (see Fig. 227A). It is easy to see how complex is such a structure, and how difficult it is to shape the stones for it, if it is to be entirely of voussoirs of cut stone. It is a serious problem in stereotomy. When, however, mortar masonry vaulting is used, as that which carries the floor, *C*, in Fig. 227, there is no greater difficulty involved than that of building the wooden centring which, indeed, requires geometrical skill and much readiness, especially in a case like the Colosseum. Where all the outer corridors are elliptical in plan, one centre can be used in at most four points of the great ring, and that implies that a great staff of carpenters must have been always at work, setting up and finishing these wooden centres for the elliptical corridors alone. Other centres, of course, are constantly



227A—(From A. and B. Dicty.)

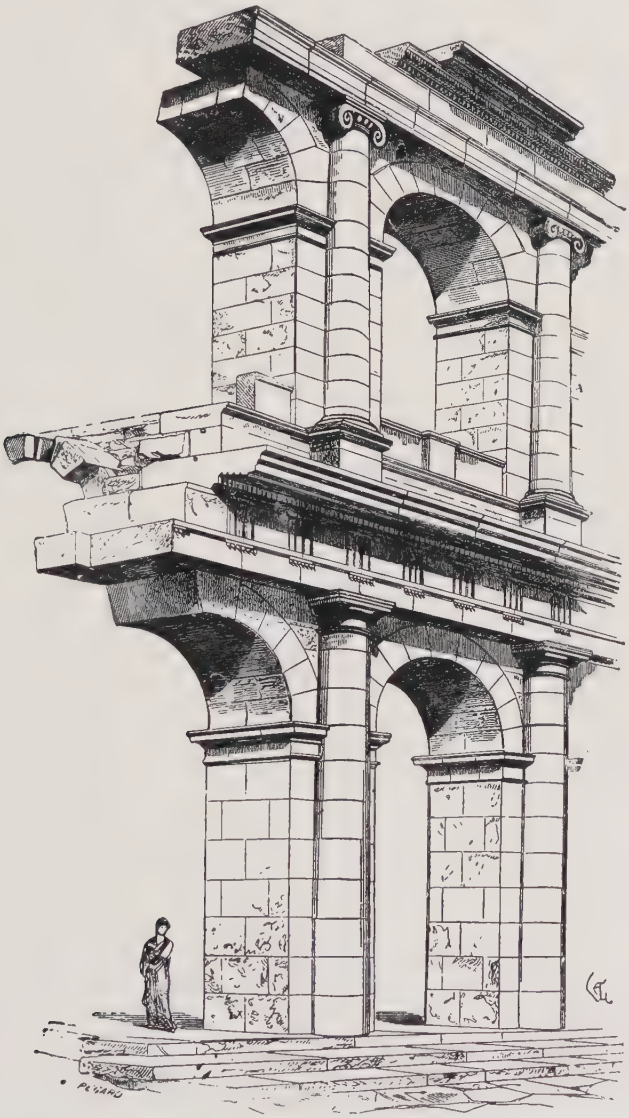
called for in building those sloping vaults which carry the stairs, the seats for spectators, and the rest, and moreover there were seven of the great oval outer corridors, two or three corridors of an oval smaller, because nearer the arena, and, in the ground story alone, about 160 of the conical vaults within, these taking, of course, many different forms.

Before leaving the illustration (Fig. 227) it is necessary to note the mouths of the vomitoria, *K*. These vomitoria are gangways of approach and departure, admitting and affording exit to the spectators, and the word is also applied to the mouths of these passages alone. It will be seen that three of these openings are carried right through the rings of steps, and are built around with low walls, while two others serve the uppermost great horizontal gangway or passage of circulation which passes around the hall, *C*, and separates the second and third belt of seats.

This gigantic monument, the Flavian amphitheatre, as it is called more properly, is not very different in plan or in structure to the smaller amphitheatres which are found in many parts of the Empire. The Colosseum is about 584 feet long from out to out, and 468 feet wide. The great amphitheatre at Capua in Campania was nearly as large, and so was that at El Jemm in Tunisia, and again that at Tarragona in Spain. The amphitheatre at Verona in Venetia is most interesting, because it has preserved its inner fittings with its tiers of seats almost complete for three-quarters of its height; the outer and upper rings of seats, with the corridors below and the outermost wall, having all disappeared except for one relatively small part of the original circuit. This amphitheatre is still used for dramatic performances of various kinds, a temporary stage of wood being erected in the arena. The great amphitheatres at Arles and Nîmes are also in very good preservation, having been hardly used at all as quarries—the abuse which has ruined the Colosseum. An amphitheatre about as large as that of Arles is at Pompeii, and this, being in excellent condition, is estimated to seat 20,000 spectators. Another, approximately of the same size, is at Pergamon, on the coast of Asia Minor.

The theatres of the Roman Imperial epoch are not unlike the amphitheatres in their structure. By far the most celebrated of those whose remains exist is one in the city of Rome, known as the Theatre of Marcellus. Fig. 228 gives the exterior of this important building, and the drawing shows very perfectly the structure of the outer series

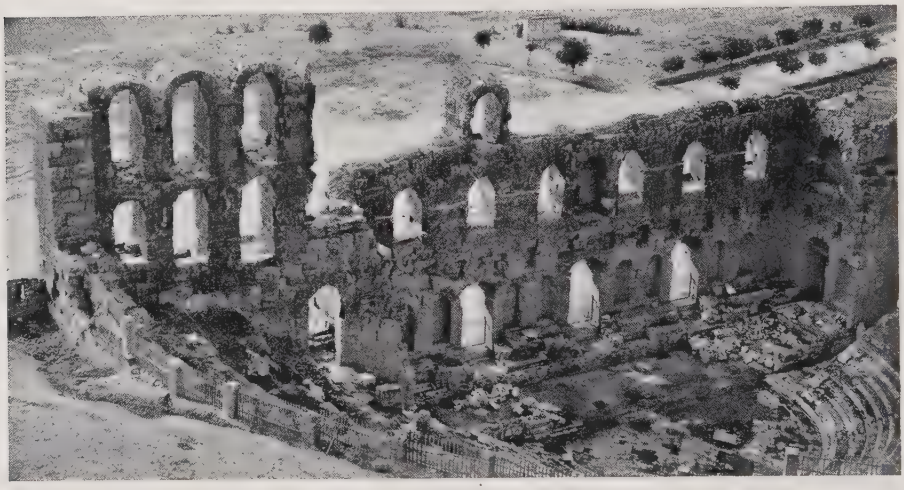
of arcades, and the connection between this cut-stone, dry-built exterior and the tunnel vault of the first outer corridor, which is built of rough stone laid in mortar. The piers of the arcade are so massive



228—One bay of the Theatre of Marcellus, Rome.
Drawn by Viollet-le-Duc. (From Eu. A.)

and are held in place so firmly by superincumbent weight, that this whole mass of squared stone is treated as if it were a natural hillside against which the mortar-built vaults within may push without danger.

There is one way in which the drawing may mislead the reader, and that is in the apparent openness of it, showing the sky, as it were, through its arches. Instead of that openness, each one of those arches leads into a sombre interior, that of one of those wedge-shaped passages beyond the great outer corridor as in the Colosseum (Fig. 226). All is darkness within, and this adds to the appearance of enormous solidity given by the exterior of any one of these Roman



229—The Odeion or Musical Theatre of Herodes Atticus at Athens. Seen from the northeast and from the slopes of the Acropolis. (From photo.)

theatres or amphitheatres, so long as the interior vaulting remains in place. It is necessary to insist upon it, because this outer decoration, the sham columns, the make-believe entablatures, the whole imitative structure built up with the real mass behind, has served as a model to the neoclassic art of the sixteenth and following centuries, and designers continually accept and repeat the details of these shafts, capitals, friezes, with their minutest mouldings and dentils, without considering that the Romans applied those details to buildings of great solidity and of still greater apparent massiveness, while the moderns take them unchanged to put upon thin walls pierced with innumerable large glazed windows. This subject will, of course, be treated at length in Volume III.

The Roman work in cut stone can be seen in a lighter form in the Odeion, which stands beside the great theatre of Dionysos, south of the Acropolis at Athens. That great music hall was built, as Pausanias states (Book VII, Ch. 20), by Herodes Atticus, in the time of

Marcus Aurelius, about 125 A.D. This building was roofed, though apparently not vaulted in any important part, and we have therefore the condition of a massive stone wall pierced with three stories of large windows, closed in each case with a round arch of carefully cut voussoirs. Fig. 229 shows this wall, namely, that back of the stage, in this case the most southerly front, as seen from within the theatre —that is, from the sloping bank of débris beneath the Acropolis cliff.

Of the Roman memorial arches the earlier ones have disappeared. We hear of arches of the time of the Republic, but the earliest that we possess are of the Empire, all but one or two are of a time as late as the second century A.D. This is a constant check in our studies of the origin of Roman art, that the free expenditure and magnificent conceptions of the Imperial epoch, from the time of Vespasian downward, resulted in the sweeping away of so many important buildings

230—Flavian Bridge and Memorial Arches at Saint-Chamas. (Bouches-du-Rhône.) (From photo.)

of earlier times. Our discoveries in the Roman Forum and its immediate vicinity are less valuable than they would be because of the continued replacing of older work by recent work until the buildings, the streets and squares, the very pavement itself, have come to be of the fourth century or later and of the decadent period of Roman building.

To take first the very simplest form of the memorial arch, Fig. 230 gives a photograph of the bridge of Saint-Chamas, a little village in the south of France between Avignon and Arles. The bridge itself crosses a small stream, the Touloubre, almost dry in summer, which, however, has to be spanned by the road from Arles to Aix-en-Provence. The arches bear an inscription stating that they and the bridge were erected by the orders of a patrician, Donnius Flavus, who had been priest of Roma and of Augustus. The letters of the inscription are of a style that fixes the date early in the first century, perhaps during the reign of Tiberius (14–37 A.D.). These two arches are, then, memorials simply; they are built to commemorate the public-spirited citizen who erected the bridge for the people of the Roman province. They are also entirely of cut stone without mortar. In architectural style the design shows perfectly the mingling of Grecian and Etruscan influence at an early stage of its development. Here there is no "Roman Order," the arch is simply carried through a solid stone wall; it rests upon its own abutments, which are marked by very slight moulded capitals, and a still slighter break in the smooth surface of the wall to mark the little antæ which carry the capital, and all this is done just as the Romanesque builder of 800 years later would have built them, without any pretence at a Greek suggestion of any sort. Then the outer edges of the piece of wall which constitutes the memorial are re-enforced, both as construction and as adornment, by fluted Corinthian pilasters of great interest, carefully wrought with delicately sculptured capitals; and here comes in the Greek feeling as modified by the Romans in their constant desire for greater magnificence. The entablature is an extremely careful and elegant design, the sculpture on the frieze much injured by time and mischievous stone-throwing but still partly intelligible, and, to carry up the corner piers and make them more massive by greater height, an emblematic lion is placed above each pier. There is no better example of early Imperial decorative design, because of its very simplicity and of the obvious and effective combination of the two principles, the arch doing its work and the post-and-beam building used as mere decoration.

Another memorial arch of early date (see Fig. 231) is at Saintes, on the western coast of France, and this also served in its time for the passage of a high-road. It was also built at the approach to a bridge; but when the bridge was destroyed during the nineteenth century (for

this is a prosperous and growing town, with commercial requirements) the arch was taken down stone by stone, and set up again under the direction of the *Commission des Monuments Historiques*. The building is known from its inscription to be of the reign of Tiberius. It is about 60 feet wide and high, and the solid masonry wall of which it consists is about 11 feet in thickness at the basement—below the bases of the columns. This building is also an exception to the approved Roman style. There were here only slight indications of Grecian feeling. The use of pilasters in this way is entirely non-Greek; and still more recent —still more Italian—is the limiting of their height to the height of the abutment itself. Instead of carrying, or seeming to carry, the entablature of the whole monument, so that the order would have the same height as the wall of the structure, they serve as an impost from which the round arches spring. This impost is treated as an entablature —so much of the Greco-Roman feeling remains.

231—Roman Gateway at Saintes (Charente-Inférieure) on the west coast of France. (From photo.)

It is interesting to see the same arrangement of two arches for the two lines of travel in a broad highway repeated after two centuries in the so-called Porta dei Borsari at Verona. This double gateway, which now crosses the Corso in the very heart of the town, was once a part of the city wall; and what we see is, of course, only the outer facing of a deep and more or less fortified gateway tower. This accounts for the stories of windows above, which are often objected to by critics who take the piece as merely a monumental structure; but here, as in the gateway at Saintes, something besides memorial effect has been aimed at, and this is not a memorial arch in the sense of being chiefly a pedestal for sculpture (see the gates of Autun, Figs. 249, 250). This double gateway was erected, as the inscription sets forth,

to commemorate the repair of the city walls in the reign of Gallienus (265 A.D.).

These exceptions to what may be called the official style, that with the Roman Order, are always interesting, because they speak

232—Roman gateway at Athens, called Arch of Hadrian. Looking northwest, from the site of the later Roman city and toward the Greek city and the Acropolis. The building seen through the middle opening of the upper story is the Parthenon. (From photo.)

of the natural feeling of a designer for logic, and intimate connection between structure and design. The arch at Saint-Chamas (Fig. 230), the arch of Hadrian at Athens (Fig. 232), and the prætorium at Lambèse all show this willingness to follow naturalistic rather than traditional methods of design. But indeed the provinces abound

in similar suggestions of a spirit of independence always welcome to the student.

At Saint-Remy (Bouches-du-Rhône) immediately adjoining the beautiful monument of the Julii, mentioned below, was a memorial arch of one gateway. It seems to be rather the Gallo-Roman provincial feeling than a late epoch which gives its peculiar character to the design. The archivolt sculptured with naturalistic fruits and flowers, the soffits with hexagonal caissons, the large sculptured figures treated like free statues, all express that constantly seen tendency to break away from the strict Greco-Roman traditions. All the superstructure has disappeared, and therefore the arch cannot be given as a complete design. The celebrated Arch of Hadrian at Athens shows an even stronger non-Greek influence, though standing in the very heart of Greece (see Fig. 232).

233—Arch of Augustus at Rimini in Emilia; middle and largest gateway. (From photo.)

At Rimini on the Adriatic is still another memorial arch which dates from the time of Augustus. This is given in Fig. 233, as it is known to modern times; for there are theories as to its having been a triple gateway. As shown in the figure, it is a single city-gate, with the added wall and swallow-tailed battlements of brick-work put up during the thirteenth century, to make it serve as a defensive work. In consequence of this change of destination the entablature of the attic is lost altogether, with all trace of the sculptures which probably crowned the work, and we have merely the two façades with sculptured busts in rondels and the well-proportioned entablature and pediment, light and small as become purely ornamental features representing no actual termination of a monument nor any sloping roof. The structure, in all other respects, as in the arches named above,

is solid stone-work, and shows the same indifference to the close alliance of the columnar design with the archway. It is noticeable, however, that the columns are brought somewhat nearer to the extrados of the arch than at Athens (Fig. 232), and that the composition is so far more classical.

The arch near Tarragona in Spain (Fig. 234), known as the Arco de Barà (or Barra) has been repaired, and is often dismissed as unimportant. It is, however, a most interesting honorary gateway of the general character of those at Saint-Chamas, described above. The needed rigidity and appearance of rigidity in the relatively thin wall is given here by coupled pilasters, instead of the grouped antæ of Saint-Chamas, but as the pilasters are set back to back, four of them in each wing of the screen wall, their value in the structure is obvious. There was an inscription, now destroyed, showing that the building was a private memorial.

234—Memorial Arch near San Vicente de Calders, 15 miles from Tarragona, on the eastern coast of Spain. (From photo.)

The memorial arch at Susa in Piedmont, west of Turin, is known by the inscription to be of the time of Augustus. The date usually assigned is 8 A.D. The northern face of this arch is shown in Fig. 235, and the southern face is almost exactly like it. Here again the same willingness is manifested to let the constructional arch do its own work, to rest upon its own imposts, and to act merely as a part of the continuous tunnel vault which goes straight through the 17-foot wall.[3] We can see in the picture how completely that vault is the outside arch merely continued through, and how the archivolt—the curved band which forms part of the exterior wall—is a mere casing or deco-

[3] It is not asserted that these walls are solid stone work for their full apparent thickness. Some of the larger arches are known to have chambers in their mass (see what is said below in connection with the great arches of Trajan and Titus).

rative border put around the opening. This archivolt is built of cut-stone voussoirs, but so is the whole vault. Then, to give to the corners some adornment, which no builder of the first century A.D. could imagine except in connection with a columnar order, four engaged Corinthian columns are set at the four corners of the monument, and these carry an entablature whose architrave is reduced to a very slender band, in order to give more room to the sculptured frieze, the zoöphorus, above it, while yet the whole entablature is kept narrow, having not more than its proper width or height for columns so large. That frieze is of remarkable beauty. The subject of the figure composition is nothing more special than a sacrifice to which citizens and soldiers approach from either side. What is unusual about the entablature is the extraordinarily wide spacing of the two columns, about 10 feet more than the height of the column itself without its pedestal. The result is that the stylobate seems to sag in the middle; and the conclusion is that either the "Roman Order" should be carried out frankly or else given up altogether. The proportions of this monument are faulty, and the arch considered next below is a vastly superior design in this one respect.

235—Memorial Arch of Augustus at Susa (Piedmont); northern face. (From Ferrero.)

The exact purpose of the arch at Susa is not understood. It has always been outside the walls, and there is every probability that it was a monument, or the base or pedestal of a monument, erected by the municipality in honour of their new prince, who had established the peace of the whole Mediterranean world. It is to be accepted as a working theory that the Roman memorial arch, early and late, is presumably the substructure for a great composition in sculpture. Important fragments of statuary of a style agreeing with the date of the arch have

been found at Susa, among them a noble torso which has been restored as a statue of Augustus, founded upon the famous statue in the Vatican. These works are in no way identified with the monument, however, and we can only accept as probable the restoration suggested by Canina,[4] of a Quadriga with Augustus standing in the chariot.

The arch of Augustus at Aosta (Fig. 236) is still more noticeably a pedestal, and this because of its great thickness or width. Each end has a central column forming, with the two angle columns, an effective pseudo-colonnade; and the entablature of this order forms a ressaut on each front and is marked by a retreat, from which the entablature of the middle part breaks out again until it is even with the face of the ressaut. The very broad archivolt on either face is cut into by engaged columns carrying the ends of the projecting piece of entablature, and this entablature is in the Doric style with triglyphs, although all the ten engaged columns are Corinthian with elaborate capitals. On the sides of the archway under the vault, dwarf pilasters carry the moulded impost which marks the spring of the vault, and between these pilasters are or have been sculptures in relief. This device of building up the Roman Order in the middle of each of the broader faces, with its engaged columns hugging closely the arched opening and carrying a short length of entablature limited by its bold projection, is the chief feature in the real superiority of this design. The cutting away of the archivolt is a solecism indeed, but will be forgiven in view of what results from it.

236—Memorial Arch at Aosta (Piedmont). (From photo.)

[4] Luigi Canina (1793–1856), the author of many works on the topography and historical architecture of Italy, did his work before the days of accurate comparative archæology. His elaborate conjectural restorations are often misleading.

The famous Arch of Titus stands, in Rome, where the Sacra Via reaches the crown of the hill before descending to the Forum. This was undoubtedly a triumphal arch in the sense that it was built to commemorate the campaigns of Titus in Syria during the principate of his father, Vespasian, including the suppression of the Jewish rebellion and the capture of Jerusalem. Still, if, as appears, it was not erected until a time about ten years later, it could hardly have adorned the triumph of Titus for those wars; and indeed the inscription shows that it was dedicated to his memory. In the seventeenth century, as we know from the great engraving by Piranesi,[5] this arch had been much defaced. It was used as a part of the enclosing wall of a great villa and only one face was plainly visible, while the columns had been removed and much of the superstructure had been destroyed. The

237—Bas-relief from Arch of Titus. (From photo.)

restoration of the eighteenth century was judicious and restrained, but the monument is still in part of uncertain antiquity. The famous relief sculptures are under the arch on the right and the left as you pass through the gateway, and commemorate the conquest of Jerusalem. One of them shows the soldiers carrying the spoils of the Temple, including the seven-branched candlestick; the other, less generally

[5] Giovanni Battista Piranesi (1720–88), engraver of about 1,500 large plates, some of great historical value because preserving the appearance of great buildings which have been altered, restored, or destroyed since his time.

known, is given in Fig. 237. It represents that part of a triumphal procession in which is the successful general standing in his chariot drawn by four horses, with soldiers before and beside the chariot, and a winged Victory beside the conqueror.

Another memorial arch of somewhat later date stands, in a way that can still be understood, at the head of what was once a great Roman pier stretching far out into the Adriatic. Fig. 238 gives a view of the port of Ancona with the modern mole stretching away

238—View of Arch at Ancona (Fig. 239) with pier replacing the ancient mole. (From photo.)

from the right to the left, carrying at its extremity a fort pierced with embrasures and mounted with guns, and having a high fortified wall connecting this mole with the city. The gateway in the square tower is closed on occasion, and this marks the boundary of the military reservation. On the extreme right, then, is as much as remains of the great Roman mole, which was allowed to go to destruction during the Middle Ages. The arch is seen between this pier and the spectator, with a modern flight of steps to replace what was once a ramp allowing wheeled vehicles to mount the ascent. The view is taken from the tower of the Church of S. Pellegrino.

Fig. 239 shows the same building from the level of the street. Its inscription is very nearly complete, and tells how the Roman Senate built the memorial arch in honour of Trajan and to commemorate the completion of the new quays and piers. The holes rudely cut in the marble have been deliberately enlarged in order to pull away the bronze festoons and rosettes which once adorned the face. An interesting restoration of the arch has been made by an excellent

critic and artist, Théodore Labrouste,[6] but there is no need of restoration to give us the general scheme without any room for doubt, and as for the missing ornamentation, no one can supply it except in imagination. There can be no doubt that a group of bronze statues crowned the attic and formed its chief feature. Labrouste's restoration imagines an equestrian statue of Trajan, and two draped symbolic female figures, with eagles at the four corners; but his authority for this does not appear.

Of all the memorial arches having but one gateway, much the most important is that of Trajan at Benevento in Campania. Fig. 240* shows the western side of this building, which is much the most important in its display of architectural sculpture, of all the building left for us in fair condition by the Romans. There are reliefs on the jambs or inner faces of the archway, as there are in other memorial arches named above, for instance, as in the Arch of Titus; but that which is important here is the historical sculpture in bands on the principal faces. The alternation of figures given at a larger and a smaller scale naturally excites surprise and adverse criticism; but it is noticeable that the small figures make up purely symbolical scenes, while those of greater than life size are evidently a record of

239—Arch of Trajan at Ancona. (From photo.)

[6] François Marie Théodore Labrouste (1799–1885), architect and brother of the more celebrated Henri Labrouste, lived in Rome from 1827 to 1833, as holder of the great French prize given to architectural students, and while there made careful studies of restorations of important monuments. These studies have influenced greatly the archæological researches of more modern times.

*Fig. 240 is the frontispiece of this volume.

events in Trajan's reign. One of these is given in Fig. 241. It is the upper right-hand panel of the large scale, that is to say the historical sculpture in the general view (Fig. 240). The lighting of the plaster cast from which this was taken is altogether different from the out-of-door exposure of the arch itself; and this is even an advantage as showing more clearly the actual significance of the group. Fig. 242 shows the group sculptured on the northern jamb of the gateway, that is to say, in the place corresponding in all respects with the well-known triumph scene in the Arch of Titus, shown in Fig. 237. This is a still finer composition than the one shown in Fig. 242, but also it is more injured by the breaking away of the arms, which must have been entirely free of the background, in this way agreeing with the Grecian use of the very highest relief in the sculpture of metopes, as in the Parthenon. It is a most important step in the development of architectural art—this adoption in the second century A.D., of historical narrative and national incident in sculpture of dignified character. If the end of the ancient civilization had not been so near, if the time had not come for the complete decay of sculpture as a fine art (a change destined to be complete in two hundred and fifty years from the death of Titus), the world would have had what has never been completely achieved. The art of the Middle Ages was destined to be based upon other fundamental thoughts, and the modern world

241—Historical Sculpture from Trajan Arch at Benevento. (From photo of plaster cast, Art Institute of Chicago.)

242—Historical Relief from Trajan Arch at Benevento. (From photo.)

finds sculpture on a great scale far too expensive for free use in its own monuments.

As regards the interior structure of these memorial arches, it is not often found that they have solid mortar-masonry filling. Within the cut-stone wall and above the solid vault of the gateway, which is kept in place by its load of masonry, there are open chambers in

243—Arch of Trajan at Timgad, Algeria. (From photo.)

nearly every case, and we find in some of the great arches of the Capital that these chambers were accessible and may have been put to use.

Memorial arches in the city of Rome were commonly planned in a more stately way than those we have been treating, with three gateways, and those proportioned to one another and to the mass with very special care for the effectiveness of the whole. It was often the case that not all these gateways were open at once. The same general plan was used in many smaller towns. Thus at Lambèse in Algeria is the Arch of Septimius Severus, much ruined but still presenting its three gateways tolerably complete. There is no trace of sculpture; all is small, square cut-stone work of great accuracy and perfect finish, with only a filling of inferior material. At Timgad, also in Algeria, are the ruins of the ancient city of Thamugas, and among them

a triple arch bearing many interesting signs of a late and yet very artistic epoch. Fig. 243 shows this memorial arch, which has been stayed up by modern masonry, and also, as is very evident, partly rebuilt, at least to the extent of piling up in their old places stones which had fallen. Thus on either side, high above the open archway, is a pediment of rounded form—a feature unusual though not unique in Roman art. This pediment represents no roof at all, but merely

244—Arch or gateway on great avenue, Palmyra. (From photo.)

spans the distance between two ressauts, which themselves are of great projection and are carried upon Corinthian columns fully relieved from the wall behind, with corresponding pilasters built into the wall face. In the middle there was apparently no such feature, but a flat tablet with the inscription was placed upon the cornice and formed the face of that architectural attic which is indicated now by three courses of large stones. According to this inscription, which is preserved, the arch was erected in honour of the Emperor Trajan.

Fig. 244 is a photograph of the so-called triumphal arch at Palmyra, with one colonnade of the four which start from it. For the arch in question, a most complicated structure, is at the entrance of the great market-place which reached as far as to the wall of the Tem-

ple of the Sun, and from which the triple avenue marked by the four colonnades stretched away to the north-west. The view given in the photograph is, then, nearly from the north-west. Fig. 245 gives the restoration of this building made by Wood and Dawkins[7] early in the nineteenth century. They have chosen the opposite, that is to say, the south-easterly side facing the market-place. The two faces are of almost exactly the same design, and the pediment which Wood marks with the letter A he states to be entirely conjectural. Fig. 246, then, is a plan taken from the same work, and it will be seen that the face shown in Wood's restoration (Fig. 245) is that parallel with the lower edge of the plan. The front given in the photograph (Fig. 244) is the one turned toward the colonnade. The columns shown in the photo-

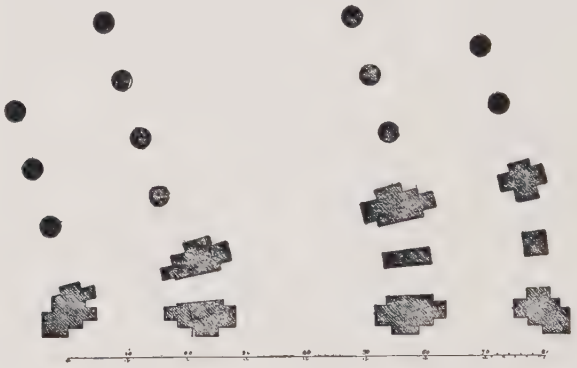
245—Restored front of covered gateway at Palmyra. (From Wood.) A, pediment, conjectural: Height to B, 44 feet: to D, 22 feet.

graph are, then, those of the second row from the left of the plan, the others having disappeared.

It is not known at all how this strange building was roofed and coped. Its plan is a long narrow triangle, and where that triangular space is widest, on the right in the plan, it is seen that there are other

[7] Ruins of Palmyra and Balbec, by Robert Wood, Esq. London, 1827: being the second edition of the two books, Palmyra, 1753; Balbec, 1757.

piers, between which and the larger and decorative piers of the two façades there are low, round arches, with larger and more decorative openings above, but much ruined. The narrow face of the triangle, which is the north-eastern front, shows two of these narrow openings below, and square windows with frontons above. Unfortunately Wood did not try to restore that, in imagination, while the building was in the condition in which he found it, nor did he give any drawings of that front as it was in his time; but another plate in his volume, a careful "perspective" drawing by J. P. Borra, and recent photo-



246—Plan of Palmyra Gateway (Fig. 245), and of the starting of the avenue of columns. (From Wood.)

graphs which cannot be published here, explain the design as described above.

That colonnade of Palmyra changes its direction in a curious way at a distance of one-third of a mile from the "triumphal arch," and leads off to a large building called by Robert Wood a sepulchre, but which to our modern students is rather a columbarium (see Chapter V).

At Orange, in Provence, is a very exceptional memorial arch having also three gateways. It is thought to be of the time of Tiberius and to commemorate the defeat of certain Gallic and Germanic tribes who had risen against the Roman dominion and made an attack on the ancient province. In commemoration of this war with the barbarians large surfaces of the monument are covered with the most extraordinary trophies of standards, shields, and weapons of all sorts, and upon the attic is a relief showing a desperate struggle. This excess of decoration adds no charm to the building, but it does not disguise its main features, which are these—the depth is very great, about 25

feet, and the face formed by each end is adorned with four engaged Corinthian columns carrying a pediment built out as a mere ornament from the lofty attic above. On each of the two principal faces, about 65 feet wide, there are four columns, but the archivolts of the arches are elaborately carved in addition to the surface decoration mentioned above. It is one of the least tasteful of the memorial arches.

A great contrast to this is the noble structure at Jerash in Syria, among the ruins of the ancient Gerasa, and known commonly as the south gate of the town. It is reproduced in the present author's handbook "How to Judge Architecture." One who is interested in architectural design cannot but care for the manly use of square antæ or returned pilasters to carry the ring of the arch, and to do this in earnest; for it will be noted better in the ruined building than it could be in a perfect monument, that the semicircle of cut-stone voussoirs rests upon the impost provided by the capitals of these antæ, so that this compound of arch and supports really takes the whole superincumbent weight. It is clear, too, that the engaged column on either side, with sculptured band around its shaft above the base, was a mere architectural adornment. No conceivable condition of the capitals and the horizontal structure which once rested upon them can have altered for the worse this thorough appearance as of a serious and careful piece of building.

The arch of Septimius Severus in the Forum of Rome, although of late date, is a very carefully planned and effective monument. There is a very large middle archway, the smaller ones being altogether subordinate to it, and the piers between them pierced by subsidiary gateways. The possibility of awkwardness in this sharp contrast of height of openings is removed by very skilfully used sculptures filling the whole field above the smaller arches. The three panels occupied by the three archways on either face are separated from one another by free-standing Corinthian columns carrying ressauts of great projection, and the whole attic from end to end is filled on either face with a long inscription. One remarkable peculiarity is the raising of the eight columns on lofty double pedestals—a square plinth below, some part of which was covered until recently by the soil and the ancient pavement, then a more slender plinth with moulded cap and base, and elaborately sculptured in relief. These pedestals, specimens of an architectural feature rare in antiquity, were

eagerly taken up and utilized in the neoclassic art of the sixteenth century and later. The long inscription relates the successful campaign of Severus against the Parthians and other eastern nations allied with them, in 203 A.D., and it is here that occurs that famous erasure, in which Caracalla, one of the sons of Severus, destroyed, when he was emperor in his turn, the allusion to his brother Geta. This arch is shown in Fig. 281 in the chapter devoted to columnar architecture as practiced by the Romans, because of the excellent use in it of a columnar composition as a mere decoration.

The arch of Constantine, near the Colosseum, is of the period when the art of sculpture was nearly lost in the Mediterranean lands; while the grandiose character of architectural design was still retained, as in the basilica of Maxentius, described below. Thus the proportions of this arch, the architectural decoration with very bold ressauts carrying above their cornice four high plinths projecting from the face of the attic, each plinth arranged to carry a colossal statue, the placing of the reliefs in four panels of each face of the attic while one panel is reserved for the great inscription, and most of all the admirable filling of the space above each minor arch—all is good and attractive. The excellent use of the order is considered in Chapter III, below. On the other hand, the sculpture, so far as it has any significance, is taken bodily from the destroyed arch of Trajan, and other parts of Trajan's Forum and the dependent buildings (see Fig. 306). The forlorn Victories and river-gods in the spandrels of the arches, and those figures which are sculptured on the bases of the pedestals—figures out of place and tending to injure the colonnade even had they been of finer conception and workmanship—are of Constantine's own time, and are a part of the evidence of that rapid decay of the expressional arts which is a notable part of that strange thing which we speak of as the Decline of the Empire. Fig. 282 shows the southwesterly face of this monument.

There are still to be mentioned memorials of one peculiar form; the so-called Janus arches, buildings of square plan, in which two parallel vaults of equal size meet in the middle, and either leave a square place which is covered by a vault at a higher level, or else cross one another, producing a groined vault. The monument itself shows four faces alike, or nearly alike, in design, and of the same size. These buildings are assumed to have stood at the crossing of important streets, and to form part of that stately system of covered porticos by means of

which, in Rome, one could go in any direction for two miles or more, always under the shelter of a roof. Those colonnaded streets, indeed, are more perfectly known to us from Palmyra and Gerasa, as stated below, and in those cities, also, the crossing of the great ways was often sheltered by vaulted buildings of this type. The Palmyra arch, Fig. 244, may be studied in this connection. The best preserved Janus arch, however, is the one in Rome in the Forum Boarium, a building of late date and without the peculiarly stately style of design which marks the memorial arches generally. It is evident that the pieces of marble used for the facing were, many of them, taken from earlier monuments. The structure has been repaired and partly restored, but still shows the defaced look shown in Fig. 247.

247—Janus Arch in Forum Boarium, Rome. (From photo.)

A very large arch with four faces, seemingly a Janus arch on the grandest possible scale, is the so-called arch of Caracalla at Tebessa in Algeria, forming part of the ruins of the ancient Roman city of Theveste (see Fig. 248). The date of the monument is sufficiently clear, as the inscription on the eastern front dedicates it to the memory of the Emperor Severus, and this and another inscription show that it was built in the time of his son and successor, Caracalla. The strongly columnar character given to the architecture, as shown in Fig. 248, tends to place the building among those treated in the next

248—Four-fronted Memorial Arch at Tebessa, Algeria. (From photo.)

chapter; but its main mass is after all the familiar square building with a round arch pierced in each one of its four walls. Unfortunately its superstructure is so much ruined that it cannot be made out perfectly. There appears to have been no great attic bearing the general inscription, as in most of the memorial arches, and instead of it are two pavilions with four columns each, parts of which are seen rising above the existing cornice. The date of this arch must be placed at 210–215

249—Inner face of Roman Gateway of the city wall of Autun (Saône-et-Loire), called Porte d'Arroux. (From photo.)

A.D., and it is interesting to see a design so significant and on the whole so pure, at an epoch so late.

The memorial arches seem worthy of this long study because they are so peculiarly Roman, in origin and in use; because no other monuments explain so fully the feeling for decorative art of the first four centuries A.D., and because there are so many of them still in existence and unrestored—for it has been worth no one's while to restore them. Emperors living in subsequent years would not take pains to restore nor even to preserve the memorials of their predecessors or of earlier times; they were far more apt to destroy, or to finish the destruction, of a previously existing arch, that its material—its sculpture and bronzes—might be used in monuments of their own.

No congregation of early Christians could use one for a church, and it would have been an absurd misapplication to have altered an arch into a Christian memorial. Again, the fate that has befallen so many Roman monuments—the fate of serving as a quarry—was less likely to assail the masonry arch, even of the largest size; because there was but little marble or fine stone about it, concealing its rough core, and because the people of the town in which the arch might stand, Arausio, Augusta Prætoria, Theveste, or Beneventum, would care a good deal to preserve this potent memorial of the former glories of their town under the great Empire.

250—Outer face of Roman Gateway of the city wall of Autun, called Porte Saint-André. (From photo.)

The gateways in city walls and the like are extremely important as giving us some insight into Roman ideas of domestic architecture, including in that term residences of all sorts, even imperial palaces. The question of windows in a wall is always a principal matter in such architecture as this; for fenestration in modern times has been found to be the one important artistic feature of such work, and the laying out of windows in a wall is as well shown in these monumental gateways as in a dwelling of equal size and dignity. The beautiful gateways at Autun (Saône-et-Loire) are famous; their period is not too late for refined design, and they are in fairly complete repair as far as the walls are concerned. Fig. 249 gives the city side of the Porte d'Arroux, and it is noticeable at once how perfectly the upper row of ten arches corresponds with and completes the general design given by the four arches below. It is a most attractive composition and might serve as a ready-made scheme for the arrangement of the open-

ings with their interposed solid mass in a modern building. The Porte St. André seen from outside the town (Fig. 250) shows in the advancing towers a slight reminiscence of the original requirement of such a gateway—the need of providing for defence. This is seen more perfectly in the doorway at Trèves (the Porta Nigra) given below; but the existence of these towers in the peaceful heart of Roman Gaul serves to remind the student of fortification, of the earlier flanking towers which must have existed here, or in an equivalent gateway in earlier days. The new stone facing seen in the tower at the left is part of a restoration about the middle of the nineteenth century.

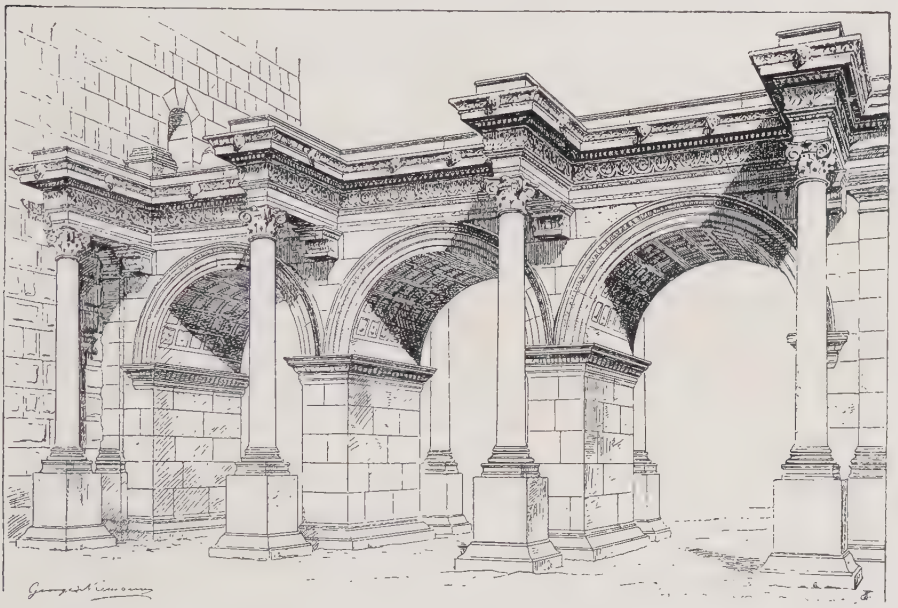
250A—Roman gateway at Trèves (Trier) in Rhenish Prussia. (From photo.)

In neither of these gateways is there any mortar so far as the original structure is concerned, though restorations and repairs have caused the pointing of some of the joints. The almost complete absence of columnar architecture, only a few Ionic pilasters having existed at any time, so far as the evidence can be understood, makes of these purely arcuated structures an especially interesting study in Roman art.

The Porta Nigra at Augusta Trevirorum (the modern Trier or Trèves, Fig. 250A) is very commonly set down to a much later date; and if we could accept the theory that it belongs to the epoch of Constantine the Great, it could not be treated in this connection. In any event the unfinished condition of the building prevents accurate appreciation of the style, and restorations have been made in an utterly unintelligent fashion. The system of fenestration may be compared with that in the two gateways at Autun. It is also well to note the boldly projecting semicircular tower-like masses which flank the double gate, and retain, much more than the slight projection at Autun, the place of their original character as of flanking towers for defence.

Other doorways of interesting sort exist in great numbers throughout the Empire. Of memorial arches alone there are many more

than there has been room to treat here; and in addition to those there are the curious doorways pierced in walls, as of the cities of the Empire, dating from a time when there was no longer imminent danger of attack; and with these, the doorways existing where a street within a city had to be carried through an otherwise obstructive mass of masonry. Thus, in the city of Rome itself, the interesting archways in the heavy wall surrounding the so-called Portico of Octavia, and adjoining the



250 B—Roman gateways at Adalia, Asia Minor. (From Handbuch, Etr. und Röm.)

temple of Mars the Avenger, and a less noticeable one close by where the filling in of the ground has reduced the height of the imposts to 3 or 4 feet so that it seems an arch and nothing more, are studies of architectural effect in the right disposition of doorways. The arch of Gallienus is a single broad round arch thrown across a street, and adorned on each face by two pilasters and an entablature in the simplest fashion. The interesting arch of Drusus on the Appian Way was probably a memorial in its inception, but the other so-called arch of Drusus, the one within the city, under the aqueduct which is commonly called Aqua Anio, is to all appearance an archway left for convenience. The triple gateway of Hadrian at Adalia, on the southern coast of Asia Minor, is given in Fig. 250B. There seems to have been an attic; but the peculiar design, with free columns having no

responds but carrying ressauts of very unusual projection, is intact. Most exceptional and curious of all is the square-headed gateway called the Arch of the Money Changers, or of Septimius Severus *in Velabro.*[8] In this, we have merely a doorway leading to a quarter of the city. It is shown with the sculpture unfortunately much injured in Fig. 251. There seems to be no doubt that the epoch is that of Septimius Severus, although the style of the sculpture, of which there is much on the jambs, beneath the canopy, suggests an earlier date. There is certainly a dignity about the figures which we associate rather with the reign of Trajan than with a later epoch.

251—Gate of Septimius Severus, near S. Giorgio in Velabro, Rome. (From photo.)

The arches are important to us because we have so few other memorial buildings of the Imperial time. There are, however, one or two such memorials, and it is necessary to dwell upon them for a moment. In the near neighbourhood of Trèves, in the little village of Igel, there stands the monument erected apparently as the memorial of a marriage, and wholly private in its inception—a family matter. This is known as the Igel monument, almost exclusively, because the injuries which it has suffered are such that archæologists are altogether at odds about the true meaning of the inscriptions. Fig. 252 shows it from the most favourable point of view, because the farmyard buildings which surround it almost conceal it, otherwise, but the other faces are not less interesting than the one seen, except that the one on the right of the picture is more injured. The purpose of this Book is to fix an ultimate limit for the buildings described—that limit being the reign of Constantine, or the year 330 A.D., when the empire was

[8] Velabrum: A street in ancient Rome and its immediate neighbourhood. It lay westward of the Forum and between the Palatine Hill and the river.

made Oriental; but it is impossible to fix the date of this building at Igel with any such accuracy. The sculpture is of a time certainly earlier than that of Diocletian (emperor 284–305 A.D.), and the architecture, being wholly decorative, without even the slightest reference to utility, and being executed, moreover, in the more remote provinces east of the Rhine, is comparatively free from the strict rules of the developing style. The corner pilasters are nothing but the flat piers left when the space between them was hollowed out to leave the figures in relief; the entablature above these pilasters is very freely designed so as to provide a broad frieze and to crown this frieze with a double band of strictly architectural sculpture; and in this way the whole building is a simple artistic conception, the sculpture and the stone shaft itself being treated with great freedom.

A similar case is found in the column at Cussy-la-Colonne (Côte-D'Or). The upper part of the shaft is lost, and the capital, though it is supposed to exist in the neighbourhood, is not certainly identified. What stands now is about 35 feet high, having first a 10-foot pedestal, square in plan, with the sides hollowed; then an octagonal secondary

252—Monument at Igel, near Trèves (Trier), Rhenish Prussia. (From photo.)

pedestal, each face of it sculptured with a figure in high relief, apparently divinities, of which there are recognized Minerva and Jupiter; and above this a moulded base and the beginning of a shaft with decorative carving on the rounded surface.

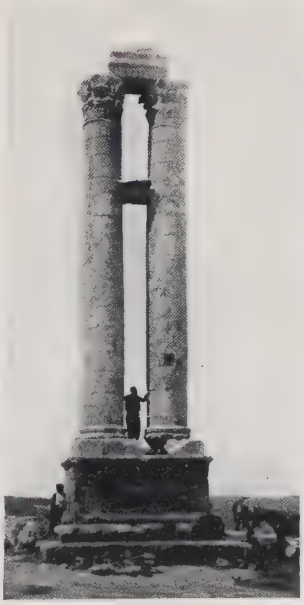
253—Monument of the Julii, Saint-Remy (Bouches-du-Rhône). (From photo.)

The most important monument in the west is, however, the really exquisite memorial of the Julii at Saint-Remy (Bouches-du-Rhône), not far from Marseilles (Fig. 253). This monument also is of disputed date, but the great refinement of its architectural forms combined with the very well-managed composition of the crowded sculptures on the base, seem to justify those who hold that it is of the reign of Augustus (emperor 30 B.C.–14 A.D.). A certain feebleness of modelling and clumsy management of the action of the horses is almost inseparable from Roman architectural adornment—except at Rome itself, and for a few glorious years. Something like it is found even on the Column of Trajan and other magnificent buildings of the capital city. The good general grouping, and the firm way in which the whole subject has been grasped by the designer, remain to fix a not late epoch for this monument. The wide-spreading Corinthian capitals are not a powerful argument either way, as that form occurs continually when the columns are not on a large scale and free.

CHAPTER III

THE COLUMNAR BUILDINGS AND GRECIAN INFLUENCE

MEMORIAL architecture is so often columnar, under the Empire, that the consideration of its character may well precede that of temples and porticos. The monuments of the epoch in Syria are of a markedly columnar character. The Grecian influence of the fourth and third centuries B.C., under the successors of Alexander, remained strong there throughout the Imperial age. It is noticeable how fond the western Asiatic builders of this period had become of the Græco-Roman column, treated by itself, used as an all-sufficient motive. Thus, at Sermeda in northern Syria is a bi-columnar monument (see Fig. 254), bearing a date equivalent to 132 A.D.; and at Katura another, in which the columns are wider apart and include between them an arch which is the opening of a covered passage leading to a rock-hewn tomb in the hillside, the façade and elaborate building at the entrance serving merely to mark in a dignified way the entrance to the burial chambers beyond. A column at Benabil, farther north, is all that remains of another bi-columnar monument, and others in the neighbourhood have been discovered.[9]



254—Tombal Monument at Sermeda, Syria. (From photo.)

Of somewhat later date, judging by the style of the work, is the monument at Dana (see Fig. 255), not far from Sermeda. The shafts of the columns have no entasis nor

[9] See, especially, the report by H. C. Butler, named above.

255—Tombal Monument at Dana, Syria. (From photo.)

even any noticeable taper; but the general aspect of the monument, its heavy epistyle and cornice with a frieze of ogee section, the whole loading the Ionic columns sufficiently for good architectural effect, and repeating the massive form of the podium below, all go to make an effective design in spite of barbaric inadequacy in the treatment of details. The tomb of Olympiana, not far from Dana, is a similar memorial. Four columns supporting an entablature form a square; but there the columns have a rather excessive entasis; and a neck moulding one whole diameter below the capital proper, gives them a very mediæval look. Similar monumental structures occur in many parts of Syria, especially in the neighbourhoods of the great towns; but they are frequently the result of late putting together of fragments of earlier architecture. The tombal chamber, underground, is reached by a stairway within the square of columns—which once supported a continuous roof of some kind. Similar things occur in the immediate neighbourhood of Palmyra.

Tombs of still more elaborate form exist in Syria; and the modern conditions of the country, with large tracts nearly uninhabited, have tended to their preservation. Thus a tomb at Dana is shown in Fig. 256. It is given by De Vogüé[10] (pl. 77), and appears to be 15 feet square outside the walls of the square cella—about 45 feet high to the top course of the roof

256—Tomb at Dana, Syria. (From photo.)

[10] Syrie Centrale, Architecture civile et religieuse. Paris, 1865–77.

as it now exists. The entrance to the subterranean tomb-chamber is within the cella. The portico consisted of four columns, of which three remain. The shafts are unfluted but have rich Corinthian capitals. The extremely curious pilasters at the corners, at once reeded and fluted, are not shown in the De Vogüé plate, as the columns hide them; but the brief notice speaks of them as having no projection—that is to say that as pilasters they make no break with the wall but

257—Tomb at Sermeda, Syria. (From De Vogüé.)

are marked by their strange fluting alone; as indicated in the photograph.

Tombs in the form of small temples or shrines, more costly and elaborate than that of Dana, still exist in very good condition. One of the largest is near Souweida,[11] and has an inscription, dedicating it to the memory of Hamrath, the wife of a chief, prince, or emir of the first century A.D. The building (see Fig. 257) is about 33 feet long and 19 feet high from the lower bed of the large step next the ground to the top of the cornice. There are signs of a pyramidal

[11] Souweida: as written by De Vogüé, Soueideh. It is in lat. 32° 45′: in the heart of the Houran, between Shakka and Bosra. This interesting and unique building was almost wholly destroyed by Turkish soldiers, about 1890; and Mr. H. C. Butler could only give a photograph of its ruinous east wall.

roof. The placing this building among the remains of the Roman Imperial epoch seems necessary to show the strange, modified Grecian style, with spoiled orders and inferior grace of design, with which begins the Roman architectural epoch in the East, but the curious ornamentation consisting of shields, helmets, and the like, left in high relief when the stones of the wall were dressed, seems to be a reminiscence of a much earlier Persian taste. The interior had not been explored.

The Greeks, as we have seen, used columns both short and lofty to support votive figures and statues of famous men; but these columns had that definite purpose, and were merely pedestals taking columnar shape because that shape was so very familiar to the Grecian builders and the Grecian people. We do not hear of columns which in themselves were important; but among the Romans it became a common thing to raise a very large shaft with moulded base supported upon a pedestal carrying inscriptions, and with a capital differing widely from the accepted orders, one and all. Thus there were some which were designed independently for their own sake only, such as the famous column erected in honour of Caius Duilius and the first naval successes of the Roman people. This was the famous Rostral Column, adorned, in the first place, as the Roman historians tell us, with the actual beaks of the Carthaginian ships captured or destroyed in the sea-fight; and it is also stated that either this column, erected about 260 B.C., or one replacing it, still stood in the Forum in the time of Pliny. The name (*columna rostrata*) was extended to metallic pillars, and perhaps to masonry structures with the representation of a ship's beak, or of several such beaks, engaged in the mass and projecting at intervals; and that term has been kept in use to the present time.

Much larger columns were erected at the time of the later Republic and of the early Empire, and some of these still remain. As these were in all respects like the columns of great Imperial temples and civic buildings, there is often confusion concerning those which have been discovered; and thus the well-known Column of Phokas in the Roman Forum, though evidently of a good classical period, is for us now a memorial of the latest period of Roman Imperialism, standing for an emperor of the Byzantine line, governing about 610 A.D., and wielding a brief power over the affairs of the Italian Peninsula. One great column stands where it was erected in the first place, the

famous one known as Pompey's Pillar, at Alexandria in Egypt. This was erected by a Roman official, named Pompeius, in the reign of Diocletian. Its height is given as 104 feet from the ground to the top of the capital, and this certainly supported a statue—probably of the emperor in whose honor it was put up. Its very great size, for the column proper, that is, the shaft with capital and base, is about 75 feet in height, seems to preclude the idea that this was ever part of a temple or of a colonnade.[12] So at a still later time, in the Middle Ages indeed, there were put up the very beautiful and unusual column which still stands at Brindisi (the ancient Brundisium) on the eastern coast of Apulia (see Fig. 258), and its mate which has fallen. These columns at Brindisi may have been either the spoils of some temple of unusual size and grandeur, or may have been originally memorials of a much earlier conqueror or public benefactor. Each of these measures, with its pedestal, somewhat more than 50 feet in height, each has carried a statue or was intended to carry a statue; and there is to be considered also the very remarkable capital adorned with figures which are almost free statues in their treatment, and represent the divinities of the ocean (compare what is said below about the florid capitals resulting from the use of the Corinthian style).

258—Antique Column at Brindisi (Apulia). (From photo.)

This memorial use of the lofty column resulted in the surprising invention known as the *columna cochlis*, that is, a column of spiral character or enclosing a spiral. The earliest example, the famous Column of Trajan in Rome, has a spiral both within and without; and

[12] The columns of the large temple at Baalbek were nearly as high—but Syria is especially the land of megalithic effects.

so has its close copy, the column of Marcus Aurelius, which is given because less known (see Fig. 259). A continuous staircase goes up through the heart of the shaft, and the form of it is repeated or suggested by the ornamentation of the exterior. The history of the Dacian war is rolled out upon Trajan's Column, in a band which makes twenty-two turns around the shaft, and is therefore about 4 feet high near the base, gradually reduced to 3 feet high near the capital. There are over 2,500 figures in the whole composition and the relief was necessarily low; but when the vivid colour still remained in place it is probable that the story would be sufficiently well read even from the pavement below; see Fig. 260, in which six lower turns of the spiral can be fairly well made out. Certain upper galleries of the great buildings near would also bring the student nearer to the upper part of the shaft. The Antonine[13] column shows the German wars of the years before 180 A.D., in a scroll which makes twenty turns. The Trajan pillar was called *Columna Centenaria*, "the hundred-foot column," because the height of the column proper—shaft, base, and capital—was assumed to be exactly 100 Roman feet; which name was extended to cover the Antonine column as well. This is about 97 feet 7 inches, English or American measure; to which we add 18 feet for the pedestal and about 20 for the original statue of the emperor, now replaced in each case by a saint of the Christian church. The

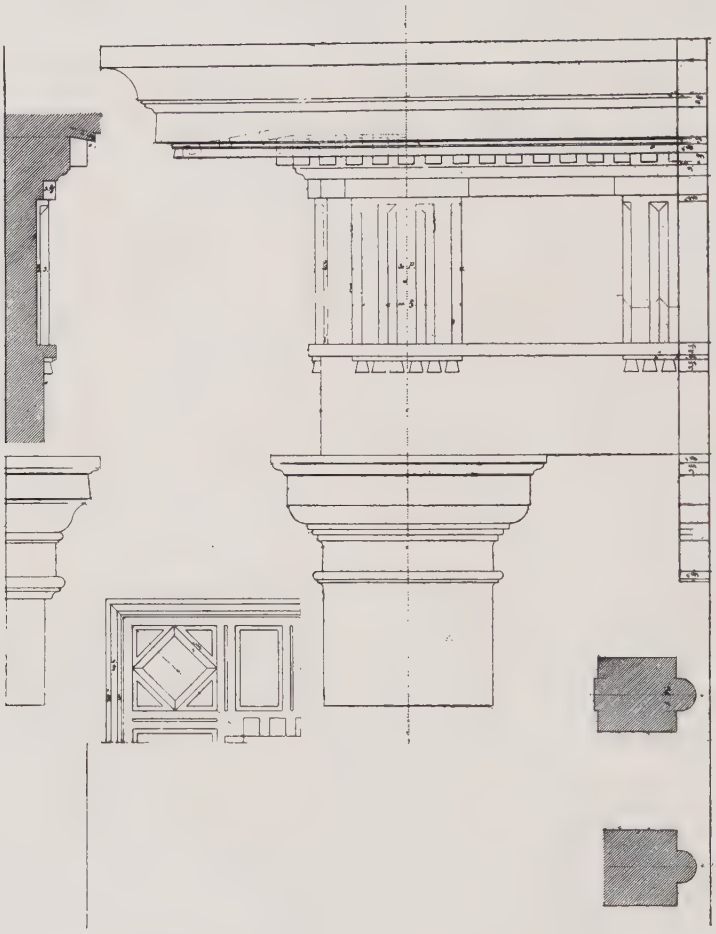
259—Column of Marcus Aurelius, Rome. (From photo.)

[13] Antonine; relating to the emperor Antoninus Pius (138–161) and his adopted son and successor Marcus Aurelius Antoninus (161–180); sometimes including Commodus (180–192), son of Marcus Aurelius.

shaft is 12 feet in diameter above the base. It is covered wholly with the spiral band of sculpture, except for 2 or 3 feet below the capital, where the fluting of the Roman Doric order appears, leading more

260—Lower part of Column of Trajan in Rome. (From photo.)

easily to the capital made up of a Roman ovolo, than could the spiral band. The great Forum of Trajan, with its appended buildings, included a square court with at least two stories of colonnades, in

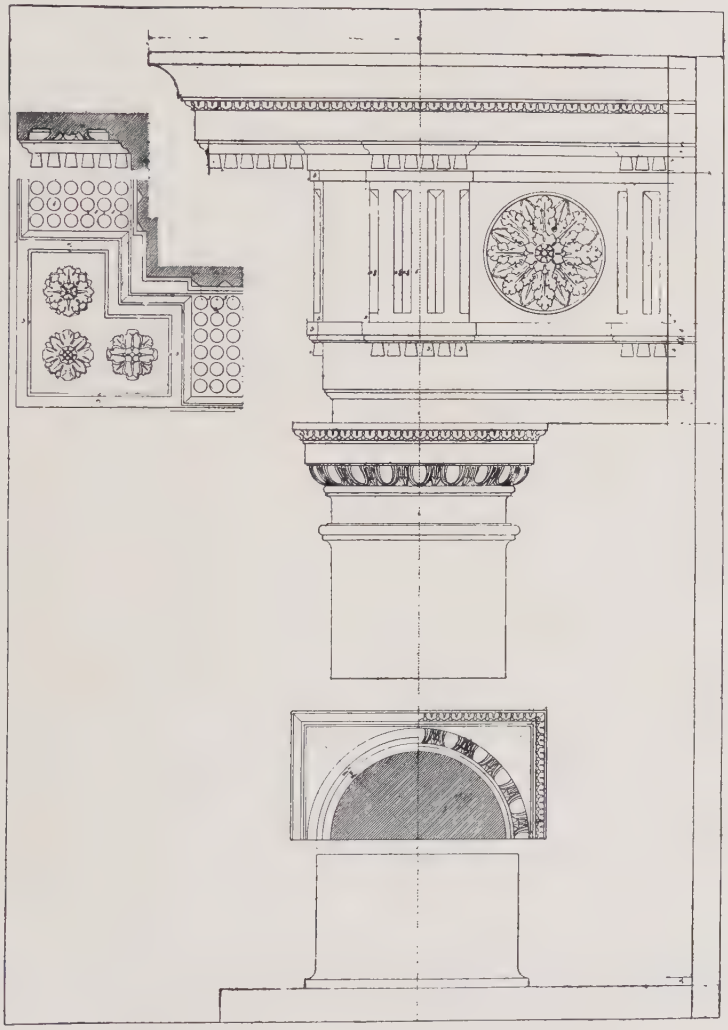


261A—Doric Order, ground story, Theatre of Marcellus. (From Normand.)

which stood the spiral shaft, so that, from the upper levels, the sculptures could be read with ease.

The architecture of the Empire might have contained all that has been discussed above, even if the study of Grecian buildings had not been pursued by the Romans beyond the mere traditions which had come into Italy and into Syria in the early times of the Roman Republic. Italian influence was, as shown in Book IV, to a great extent a Grecian influence; and this Græco-Italian spirit, with the Alexandrine traditions of western Asia, is sufficient to account for

the buildings described above. The arch, rather than the column and lintel, is their chief architectural feature, and columns when used are used to play with merely: they have no definite work to do. We



261B—Doric Order from Albano. (From Normand.)

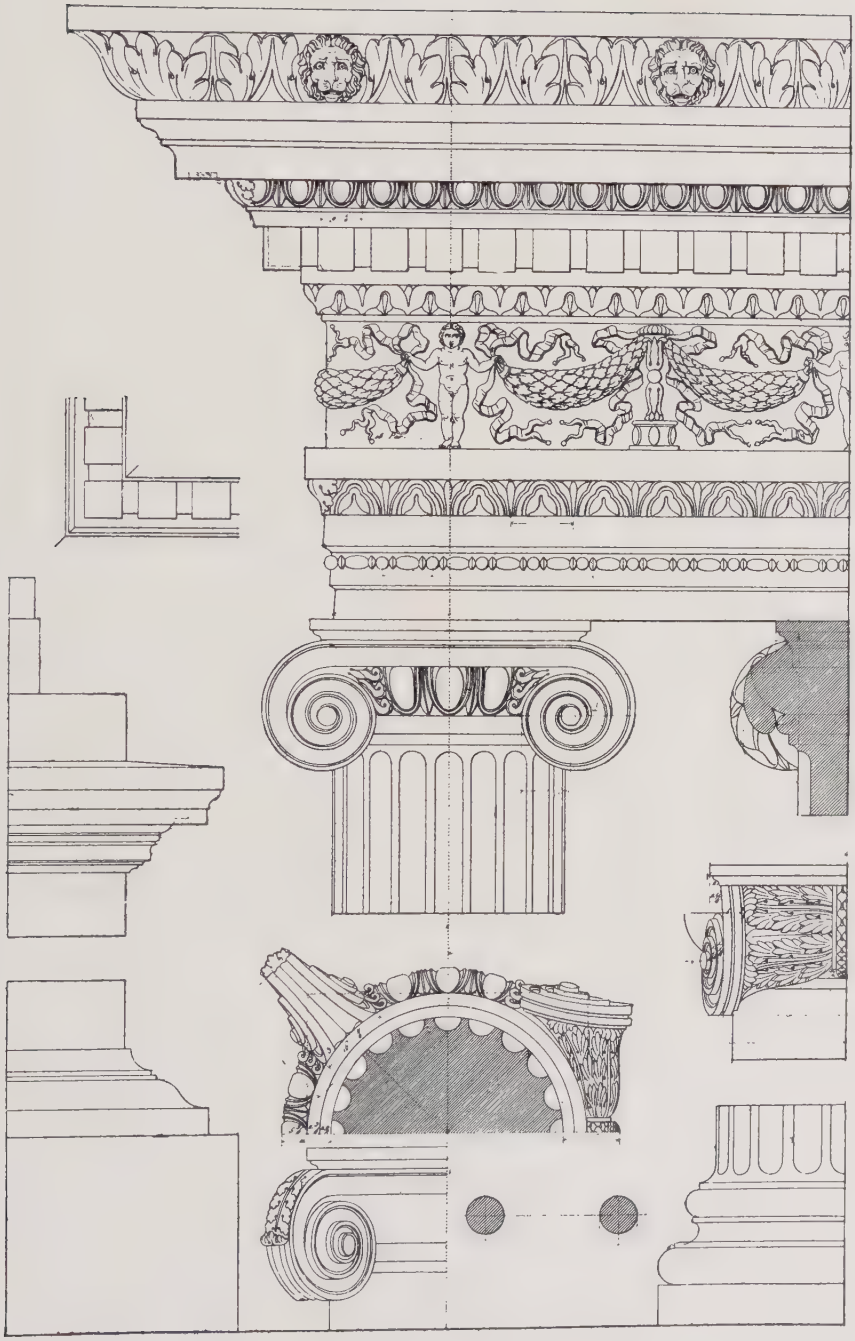
have now to consider that deliberate copying of Grecian building and of Grecian thought in architectural design which involves columnar architecture seriously undertaken, and which reached Italy and the Western provinces by the way of the conquering city itself and its aggregation of Grecian artistic plunder. In the East the artistic thought in every community was Greek already, and needed

merely the lavish outlay of the new Roman world to carry out works more grandiose than were possible to the earlier princes of the East, the successors of Alexander.

The orders, as the Greeks knew them, underwent rapid change in Roman hands. The order used in the Parthenon, the Theseion, and in most of the temples which are dealt with in the third chapter of Book III never appeared at all in Roman work. The few Grecian Doric buildings which we know to have been erected under the Roman domination, such as the temple at Cora and the gateway to the market-place at Athens, have been included in our study of Grecian art; but these are still Greek buildings in all respects, erected, the one on Greek soil, and the other in a semi-Grecian community. Instead of that order the Romans invented, it is not known when nor in what connection, the very curious modification of earlier Italian forms which we know as the Roman Doric order, and this again they modified into the so-called Tuscan order, another form of the same general conception. Fig. 261 gives side by side two Roman Doric orders as drawn by Charles Normand.[14] The great columns of Aurelius and of Trajan (shown, Figs. 259 and 260), show well enough the effect of the capital and base of this Roman Doric order when they were enriched, the ovolo of the capital carved into familiar egg-and-dart moulding, the torus of the base wrought with overlapping laurel leaves. It is still Doric, even when so enriched, because it is nothing else; and the shaft has not, in Roman practice, so accurate a form, so refined a proportion and an entasis, that it may not be channelled or fluted or left plain, made longer or shorter, or that the sculptures of the Trajan column should destroy its character. Anything like an exact characterization of the Roman Doric, or of the Tuscan, is of the Italian writers of the seventeenth century: among buildings of the great empire known to us there are only a few examples of the Roman Doric style; and we are compelled to call the simplest of these "Tuscan" from a sheer lack of an order which can be set apart as really of that style. Vitruvius, in his account of the matter (Book IV, Chapter VII), is very vague in his terms when he begins to describe the column and entablature.

The theatre of Marcellus has the Roman Doric in its basement or ground story (see Fig. 228), and the Colosseum (Fig. 226) shows us the same order in the ground story, but with the shaft rather prolonged,

[14] Charles Normand: Nouveau Parallèle des Ordres d'Architecture. Paris, 1825.



262—Order of so-called Temple of Fortuna Virilis, Rome. (From Normand.)

a result of its use here for mere superficial adornment, of the strictly utilitarian character of the monument, and of the loose way in which this simple order is treated by the Roman builders.

The Ionic order also is a little difficult to illustrate from classical Roman examples. Vitruvius, insisting as he does upon the value of the style, gives a false impression; for Vitruvius is clearly writing as a champion of a purer Grecian taste and of a return to ancient Grecian practice. We know nothing about his opinion of the buildings which he had before his eyes at the beginning of the reign of Augustus; many of the most important examples of the Ionic have perished, and the most important known to us are of much later date. Thus the temple of Fortuna Virilis (so called) standing in the Suburra at Rome, and probably the earliest building in the city which has preserved its form and character, has an extremely delicate and refined capital which Charles Normand has drawn out with care in the plate which is copied in Fig. 262. The florid sculptured decoration of the entablature is largely conjectural, for the building has been constantly altered, repaired, and then damaged again, in the course of its long existence as a church and otherwise throughout the Middle Ages. Fig. 263 is a photograph of that building as it stands with only one end and one flank visible, and with the formerly open portico built up. It will be seen that the walls are of large blocks of stone (tufa) with the columns relieved upon them, for five-sixths of the length of the building; whereas the intercolumniation nearest to the spectator is built up of bricks, as is also the front with four columns. That means that this brick-walled space was once the open porch, with four columns in front, and that the other apparent columns were really engaged in the stone walls of the cella. The height of the podium upon which the temple stands is reduced by the raising of the grade of the street, and the same change has done away with a flight of steps which once approached the portico and the entrance, and replaced them by another and a contrary slope in the pavement.

The Ionic order is very beautifully carried out in this little building; and there is no better specimen of it in Rome. The use of the outward sloping volutes at the corners is worthy of note because it repeats the same treatment in the pure Greek buildings, the Temple of the Wingless Victory and the Erechtheion at Athens. It is an unfortunate necessity, and is the most serious hindrance to the free use of the Ionic order in general building; but the radical difference

noticeable between this scheme and the really hideous devices used in the temple of Saturn (Fig. 264) is obvious. It is quite surprising, the difficulty one has in selecting a worthy instance of the style among the monuments of the Empire. In the ancient city of Gerasa, in Syria, a small part of the magnificent arcade running through the

263—So-called Temple of Fortuna Virilis. (From photo.)

town was built with Ionic capitals, and the surprising contrast between the clumsiness of these columns and the more delicate design of the Corinthian columns adjoining strikes every traveller. Thus the temple of Saturn in the Forum (Fig. 264) offers a strange modification of the Ionic order, one which we must suppose that Vitruvius would have denounced. It seems as if a Roman Doric capital had been enlarged and enriched by the addition of four corner volutes, while at the same time the capital, whether considered as altered Doric or as modified Ionic, is marred as a piece of design by the

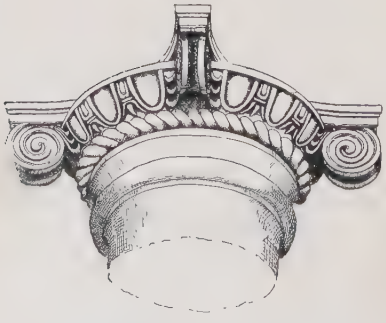
grossly exaggerated cable moulding which is put in below the echinus. Fig. 265 is an attempt to explain this design in simple lines; but the

264—Temple of Saturn in the Roman Forum. (From photo.)

abacus disappears a little too decidedly behind the sculptured echinus. The date of this building as it now stands is quite uncertain, and it was evidently carried out without careful planning: probably in the way of restoration about 300 A.D.

The Ionic order of the theatre of Marcellus was far more graceful in design, because more restrained, more nearly Greek in character, and this undoubtedly dates from the reign of Augustus (see Fig. 228 and Chapter II of this Book).

The order which the Romans accepted and approved was, then, that known as Corinthian, of which we find so few instances in the work of the Greeks before the Roman time (see above, Book III). This Corinthian order is seen at its best and purest during the Augustan period, but the changes which it continually went through in later times seem never to have spoiled its attractiveness to the Roman builders, and do not mar it for modern students except in



265—Diagram of capital of Temple of Saturn, Rome. (From Eu. A.)

comparison with the finest types. The capitals are spread at the top so as to diminish the actual space between the abaci; the caulicoli and the angle volutes are twisted and intertwined in a score of different ways; the corner volutes are enlarged until that result is reached which modern writers have expressed by calling it the Composite order—as if this were anything except a modified and seriously marred Corinthian. Finally capitals are found in which figures of men and beasts are combined with a system of leafage and a shape of the bell, which are in a good Corinthian style.

266—Order of temple of Mars the Avenger, Rome. Restoration by Vaudremer.

Fig. 266 shows the Roman Corinthian capital restored by a most intelligent French architect, Mr. Vaudremer, from the injured marbles of the temple of Mars the Avenger (Mars Ultor) in the Forum of Augustus, at Rome. The building belongs to the best period, but is completely ruined. It is the greatest single loss which the study of architecture has suffered in the desolation which has overwhelmed the great capital city. Only four columns remain erect. The columns have been studied carefully in detail; and some of the most elaborate buildings of modern Europe, carried out in the Corinthian style, have been studied from these. The order is nearly 60 feet high, the capital alone having a height of something over 8 feet. It is strictly severe classic Corinthian; the fluting, the moulding of the base, the moulding of the necking and the abacus, and the disposition of the acanthus leaves and scrolls all perfectly regular, and form-

267—Corinthian Capital, Central Museum, Athens. (From photo.)

ing together the most conservative example of the order which it is possible to find. The width of the pteroma in the clear between the cella wall and the shaft was about six feet.

Fig. 267 is a capital from the temple of the Olympian Zeus in

267A—Florid Corinthian capital in Lateran Museum at Rome. (From photo.)

Athens, the actual capital itself brought into the museum from the site of the temple. In the *Museo Profano* of the Lateran palace are many capitals of very florid leafage and some of them are adorned with figures of beasts, birds, and human beings; one of them having at each corner, where the great volute is in Fig. 267, a pair of rams with heads down and in the act of charging; as shown in Fig. 267A Fig. 268 is a capital found in the thermæ of Caracalla, and un-

doubtedly belonging to one of the great columns which seemed to carry the groined vaults of one of the great halls. It belongs to what the sixteenth-century Italian writers christened the Composite order, in that it has the great scrolls or volutes of the Ionic style superadded to the high Corinthian bell and the florid Corinthian leafage. A similar use of a human figure entirely realized as sculpture and surrounded by florid leafage is seen in that surprising keystone of the arch of Titus, well known from frequent reproductions. In that case the figure represents an armed man with helmet and spear. The very delicate sculpture of the Temple of Concord is expressive of the reign of Augustus, and yet the feeling which evidently existed in the designer's mind, that every moulding must be sculptured and every rounded or projecting mass broken up into minute ornament, is one which marks the Roman Imperial tendencies as distinguished from those of earlier days. There is, indeed, a sufficient relief in the broad, unbroken surface of frieze and architrave; and the dentil blocks are of such size that they repeat those larger surfaces below. The steady increase in richness of ornamentation toward the top may be considered as an expression of right feeling in such matters when the parts are all close, packed together, none of them very far above the eye. The great size of the cyma recta and the adornment of it with very large and very elaborate acanthus leaves are interesting features. In the Temple of Vespasian there is a less graceful proportioning of these parts. One moulding follows another of very nearly the same size. The cyma recta is not much larger than the carved mouldings next below it, and those mouldings, at least four in number, are nearly the same size one with another, as again in the dentil course, all about the same number of inches in

268—Florid Corinthian capital preserved in the thermæ of Caracalla. The combination of Ionic volutes with Corinthian leafage was called by the sixteenth-century Italians the Composite style of capital, making the fifth of the "Five Orders." (From photo.)

vertical height. The unquestioned inferiority of the frieze, adorned merely with the emblems of sacrifice, lowers the whole composition.

The most approved temple left to us from Roman times is the so-called "square house," *La Maison Carrée* at Nîmes (Gard), in the south of France. This building is given in Fig. 269. It is nearly in its original condition; the cella wall has been repaired for use as a museum of antiquities found in and near Nîmes, but the arrangement is unchanged and the capitals and entablature have suffered very little.

269—Temple at Nîmes (Gard), called *La Maison Carrée*. (From photo.)

Here, as in the temple of Fortuna Virilis, Fig. 263, is a system not recognized by the Greeks (but compare what is said in Book III of the Zeus temple at Akragas) and hard to explain except in technical terms. We can only say that the temple is pseudo-peripteral, with a portico hexastyle with two columns in each flank. The high podium from which the columns rise and the top of which is identical with the floor of the cella and portico, is seen in most Roman temples, perhaps because they were town buildings with but little reserved space about them. It was also an Etruscan tradition. The building was most carefully designed, its details all conscientiously wrought and sculpture finished with extreme care. There is here also a marked instance of that disposition which we find at Medinet Habou in Egypt and in

the Parthenon and other temples in Greece, to emphasize certain effects and to give an added grace to the proportions by the use of subtile and nearly invisible curves. Thus the long side of the entablature curves outward horizontally $4\frac{1}{2}$ inches in the middle, so that the building is wider there than at either end.

Fig. 270 shows the temple at Vienne (Isère), and this also is of refined style, but has suffered more from modern indifference. It is

270—Roman Temple at Vienne (Isère) on the Rhône. Supposed to have been dedicated to Augustus and Livia, and to be of about 10 A.D. (From photo.)

not even certain, though very probable, that the cella was originally of the curious form shown, having the full width of the stereobate at the rear of the temple and almost immediately narrowing, leaving an open pteroma. The temple was possibly peristylar. It is noticeably larger in scale than that of Nîmes, having only 8 columns on each flank with a length of about 87 feet, instead of 11 columns in only 76 feet of length.

At Pola in Istria is a temple as perfect as the two French examples, and of probably earlier date. The bronze letters on the frieze of the front have left their pins or the holes made for them, and the

inscription thus made out, though read differently by different students[15] has certainly a dedication to "Augustus Cæsar" without the special proper name which would give it to a later emperor than the first. Fig. 271 gives the excellent drawing published in 1816. Since that time a roof has been put on, and the building is used as a

271—Temple at Pola in Istria. (From S. and R., Vol. IV.)

museum of antiquities; and the very fine breccia shafts have been partly repolished.

The most interesting fact about this temple is that it was one of a pair, apparently exactly alike. Each building being about 27 feet wide, the space between the two was more than twice that width—or about 70 feet. The two rear walls stand still in good condition, as they were when a drawing of this view was made, about 1810. The order of the temple of Augustus is not much injured; the plate of it as restored, published in 1816, is well worth study (see Fig. 272).

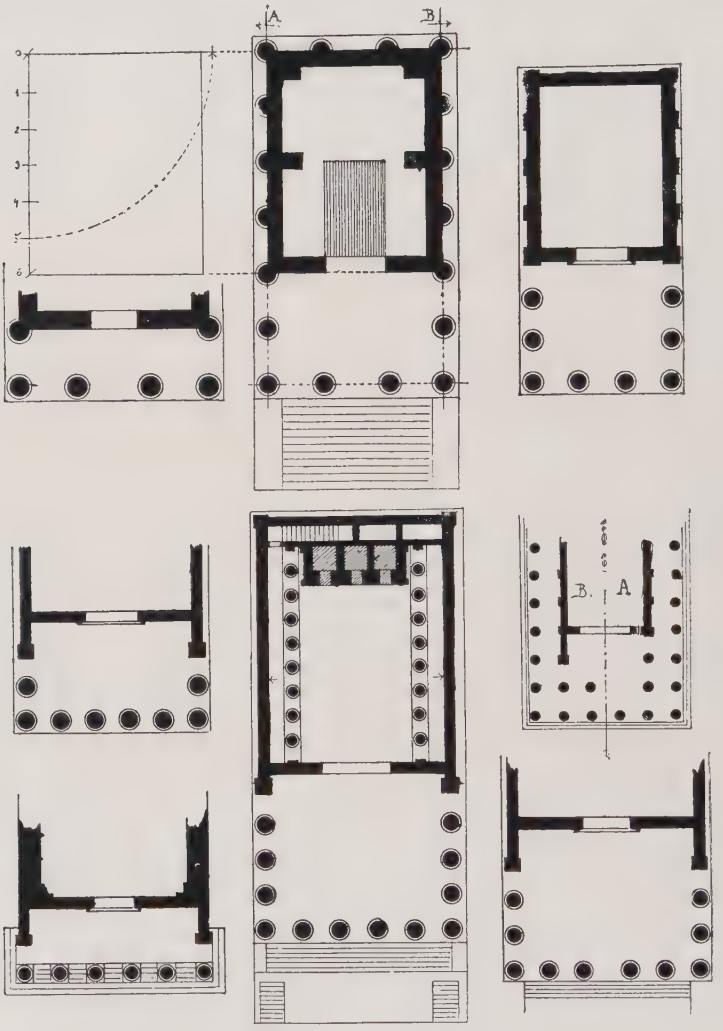
All these temples have the familiar general plan given in Fig. 273, in five of its modifications. All the temples are prostyle, and those above tetrastyle, those below hexastyle. That of Vespasian, in Rome,

[15] See T. G. Jackson, Dalmatia, The Quarino and Istria. Oxford, 1887.

has a column on the return at each end. That of Antoninus and Faustina, at Rome, has two columns on the return at each end. The temple of Jupiter, at Pompeii, has three columns on the return at each end. And finally that temple which has been almost destroyed to produce the church of S. Nicolà in Carcere, in Rome, was one of

272—Order of Temple at Pola (Fig. 171). (From S. and R., Vol. IV.)

three, the exact disposition of the columns being uncertain, although it is thought there was a double colonnade in front as the plan indi-



273—Compared plans of Roman temples.

Top line, tetrastyle portico of ruined temple at Tivoli; Temple of Fortuna Virilis, so called (see Figs. 262, 263); temple at Cori in Campania.

Below, hexastyle colonnade of Temple of Vespasian, Roman Forum; system of the three temples at S. Niccolà in Carcere, Rome.

Bottom line, Temple of Assisi (see Fig. 275); Temple of Jupiter, Pompeii; Temple of Antoninus and Faustina, Rome. (From Hdbch.—Etr. und Röm.)

cates. Roman temples generally have the nearly square cella, the high podium, and the portico at one end only, with a flight of steps. Peristylar temples are few.

The temple of Antoninus and Faustina has been often engraved and photographed. Its portico only is left in distinct and in intelligible shape, as the church of S. Lorenzo in Miranda has been built within the walls of the cella. The sculpture of the capitals is so much shattered and defaced that it is no longer a model of the Cor-

274—Temple at Tebessa, Algeria. (From photo.)

inthian style; but the curious bas-reliefs of the frieze with griffins and flowering scrolls have excited much discussion.

The temple at Tebessa, the ancient Theveste, is covered with sculpture in relief, in a way that reminds one of the temple of Antoninus, and this so strongly as to suggest that the buildings are nearly of the same epoch. At the same time there has developed itself in the African building a foreign influence, hard to trace to its origin—a taste for florid sculpture of no immediate significance, and not of human subject, which makes the building unique. It is given in Fig. 274. The pilasters, which in this instance replace engaged columns as the decoration of the walls of the cella, are not, indeed, unexampled in Roman work, but so unusual that writers who have spoken of the pilaster as a device of the neoclassic style in Italy are not far astray.

As a contrast to these rather fantastic designs, the beautiful and severe temple at Assisi in Umbria is given in Fig. 275.

The great columns of the temple of the Olympian Zeus are shown in Fig. 276; and between them Mount Lykabettos. This temple, octostyle with a double colonnade on each side, a triple colonnade in front and perhaps at each end, and probably twenty columns in the length, seems to have had ninety-two columns in its peristyle; and, though never completed, must have been one of the most effective pieces of architecture of the Roman period. The plan, however, is wholly Greek. The double temple of Venus and Roma, standing north of the Roman Forum and close against the great basilica of Maxentius and Constantine, was surrounded by what must have been a still greater peristyle of columns, but in this case the double cella occupied so very much of the space within the colonnade that the general effect was less exclusively columnar than that of the Athenian example. It is treated in Chapter V of this Book.

275—Temple at Assisi (Umbria). (From photo.)

The circular shrines must have had a charm quite apart from that of the columnar style of buildings in general. As in the hypostyle halls of Egypt and in Persia, the effect upon the mind of a vast congeries of columns exactly or nearly alike is a matter of conjecture. Some persons would be greatly impressed by it—others would find its appeal to the imagination insufficient. The apparent lack of a reason for being seems to increase as the vastness of the covered portico increases. The circular temple, however, showing the walls of its cella between Corinthian columns of considerable richness of design, would be a wholly attractive object; the light and shade on the rounded wall combining with the sharp shadows thrown by the columns would produce a very admirable architectural effect—an effect which, indeed,

depends upon light and shade and shadow for all its influence upon the mind. Fig. 277 is the round temple at Tivoli, called the temple of the Sibyl. The capitals of this Corinthian order and the sculptured entablature which rests upon them are to be taken as an exception, and a very beautiful one, to the Roman Corinthian style in general. The building must have been the work of a designer possessed of great independence of spirit.

To be contrasted with the round temple at Tivoli is the extraordinary circular shrine in Baalbek (see Fig. 278). The generally round

276—Temple of the Olympian Zeus, Athens. Ruins of the building of Hadrian. (From photo.)

form of the cella, broken by extravagantly adorned niches, and by pilasters the capitals of which are carried along in a frieze adorned with festoons, is completed by an entablature which, so far from following the walls of the substructure, reverses and contradicts their curvature, producing in plan a seven-pointed star, the points of which are separated by hollow curves. This entablature is of non-classic design, the frieze being reduced to a very narrow, cushion-like band, without carving, while the cornice is loaded with ornament. Under

each of six projecting points is set, then, a column with Corinthian capital and smooth shaft, to which a pilaster in the cella wall serves as respond. The seventh side is cut square off to accommodate the entrance door, which has two such columns to flank it. This is a vagary which has, indeed, certain resemblances to other buildings in

277—Circular Temple on the Anio, Tivoli, near Rome. (From photo.)

Syria, but which had little effect upon the course of Roman design in the west (for which see especially the palace at Spalato below).

The temples of Rome and the neighborhood are not, however, the most important buildings of the period. The record of Roman columnar design, as we know it, would not be complete without mention of the flat-roofed basilicas, the peristylar porticos and the colonnades which adorned the streets and squares of a few great cities.

The Palmyra colonnades (partly shown in Figs. 244, 246) are of Zenobia's time, in all probability, about 270 A.D.; but we know little of the details of Palmyra's history. The remains explored and drawn by Wood and Dawkins in the eighteenth century include a quadruple row of columns more than a mile long, of which the two rows enclosing a central avenue are much higher than the side rows. Probably there was a two-story colonnade on each side corresponding in

278—The Round Temple at Baalbek, Syria. (From photo.)

height to the lofty order between; the houses and shops opening on the lower and the upper story of the side colonnade. Fig. 244 gives one of the groups of columns still standing in 1890. The singular corbels, each cut in one stone with one of the drums of the shafts, are probably intended to support statues or busts.

A similar arrangement existed in Gerasa, a city whose ruins are identified at Jerash in Palestine beyond the Jordan, about 32° 30′ north latitude. Fig. 279 gives a part of the colonnade near the north end of the town; but at the south end there is an agora of uncertain form, usually said to be oval. The colonnaded street starts from this and passes through to the north gate, and is crossed by two secondary streets of similar disposition. These columns appear

to be generally of the awkward form seen in the figure; with capitals of a debased Ionic style and unfluted shafts of limestone. Gerasa has not been thoroughly described by any explorer, and its ruins are now rapidly disappearing because serving for building materials and lime-burning by a newly settled village within its walls.

These Syrian colonnades were imitated in the Rome of the emperors, and it is recorded that in the fourth century one could walk from Christian church to church for two miles, always under the shelter of a portico. The Church of St. Paul Without the Walls was connected with the *Porta San Paolo* in the Roman wall (*Porta Ostiensis* of classical times) by a marble colonnade which must have been a third of a mile in length.

279—Colonnade of Avenue at Jerash (the Ancient Gerasa), Syria. (From photo.)

It is no longer practicable to judge the purely columnar character of these structures, or of the great flat-roofed basilicas. Their plan and disposition are spoken of in Chapter V of this Book.

Fig. 280 shows a part of the enclosure of the forum of Nerva in Rome. The characteristic of this comparatively small enclosure containing the temple of Minerva was the decoration of the bounding wall on the inner side by means of Corinthian columns standing free and carrying ressauts in the form of projecting masses of the entablature built boldly out and at right angles with the wall, and having the richly sculptured frieze carried through, on every side of them. If we consider the total width of the *Forum Nervæ* within its high walls as having been 140 feet, with the free columns and ressauts projecting about 10 feet from the face of the wall, twenty-three in number along the shorter side and twenty-four on the west side adjoining the forum of Augustus, if we give to each of these columns a richly sculptured Corinthian capital, and another nearly as rich to the pilaster, the respond, while the frieze above, about 3 feet wide, is

crowded with figures delicately carved in almost the culminating style of Roman architectural sculpture, while the unusually lofty attic above

280.—Part of Forum of Nerva, Rome. Columns are covered for about half their height. (From photo.)

this contains figures larger than life size in very high relief, we shall conceive of a piece of columnar architecture more splendid than anything that modern Europe has seen. And yet this is the smallest of the imperial fora.

Columnar design is not found in separate and free colonnades

alone. In addition to the engaged columns which adorned the exteriors of so many cella walls of temples, there are such engaged colonnades as the one in the smaller temple of Heliopolis (Baalbek, in Syria) given in Fig. 216. The roofing of that temple with what was probably a banded, semicircular vault has been considered, but the

281—Arch of Septimius Severus, Rome. (From photo.)

interior design, with the extraordinarily successful use of the engaged column, deserves study by itself, as a powerful and original thought in decoration. From the flat wall projects a square pilaster having nearly half as much projection as width, and from the face of that pilaster projects the semicircular member which is the shaft of the column [16]—a column which has been compared above to the vaulting

[16] Thirteen flutings are given, twenty-four of which would make up the whole circle. The pilasters are about 6 feet 6 inches wide; the diameter of the column near the base is about 4 feet.

shafts of Gothic churches in its immediate connection with the ribs of the vaulted roof. The great beauty and richness of the columns themselves add much to the effect.

The memorial arches afford many opportunities to study Roman thought in the use of columnar design. Fig. 281 gives the arch of Septimius Severus, and Fig. 282 the arch of Constantine, their presentation in this chapter having to do exclusively with the use of the Corinthian order as a principal scheme of external decoration in a building which is wholly arcuated in its structure. It is an instance of the same feeling which created the Roman order, as has been explained in connection with the arches at Aosta and Susa; but in these great three-gated arches of Rome the columns are set free from the wall, with pilasters behind them to serve as responds, and the breaks in the entablature—the ressauts—are correspondingly bold. It is a declaration that the pseudo-Grecian order is in itself an all-sufficient decorative feature; or those columns and the entablature may be taken together with the arched openings between them, as the Roman order carried to its logical result. In the huge vaulted halls of the basilicas and the thermæ (for which see Chapter IV) there are similar examples of the Corinthian column employed on a great scale, and made more effective by the use of costly polychromatic materials.

282—Arch of Constantine, Rome. The sculptures mostly taken from the Forum of Trajan. (From photo.)

Before leaving entirely the central Roman style and its immediate influence, it will be well to speak of some curious adaptations to very simple structures of this stately manner of building. There are tombs situated in the Campagna, just outside the Porta S. Giovanni, on the Via Appia Nova, the ancient highroad which leads to Albano, of which tombs the walls, the pilasters which mark the corners, and the whole entablature except the most projecting parts (which, perhaps, are terra cotta), have been worked in hard Roman brick in carefully laid masonry, the acanthus leaves of the capitals showing the

same joints running directly through them, and the whole leafage so designed as to allow of being built up in this way. How far the bricks are carved after being laid up in their courses is not now ascertainable, as the surface has perished to such an extent that cut brick cannot be distinguished from cast brick.

Fig. 283 gives another such tomb, thought by Lanciani to be the tomb of Annia Regilla, wife of Herodes Atticus, commonly spoken of as the temple of Deus Rediculus, because assumed to mark the point whence Hannibal, in the year 211 B.C., *turned back* and began his

283—Brick tomb, called Temple of Deus Rediculus, in the Campagna, near Rome. (From photo.)

retreat before Rome. It is in the Campagna, between the old Appian Way and the little stream Almone (Almo), and not much more than half a mile southwest from the Porta S. Sebastiano. It is certainly curious to see the determination to use the Corinthian order in so small and humble a building, and to note the comparative success which has attended the effort. Why the decision was made to set the columns in this way in a countersunk recess within the outer line of the pilaster, it is hard to guess. The cost would not have been much greater had they been in projection. The entablature, however, being conceived in the first place as the finish at top of the simple parallelogram of brick-faced walls, would not have allowed of the projection of these columns according to the usual system, and probably the build-

ing was a bold innovation—the daring experiment of a designer who thought for himself. This building must not be mistaken for one in which a wall has been built at a later time, and between the three columns of a peristyle. There are several instances of that feature in the near neighborhood of the tomb under consideration.

284—Ancient doorway of the Post of the Vigiles, Rome. (From photo.)

In Rome itself, west of the Tiber and near S. Cecilia in Trastevere, is the little atrium, shrine and bath, and rooms of habitation used by the seventh cohort of the city watch (*vigiles*). Fig. 284 gives the entrance doorway, its good preservation probably resulting from the long undisturbed position beneath masses of rubbish—there has been a decided change of level in the streets and houses of that quarter—for the atrium is 30 feet below the new avenue, Viale del Rè.

285—Amphitheatrum Castrense, Rome. Exterior brick facing. (From photo.)

At the so-called Amphitheatrum Castrense—a building at the very edge of the town, and indeed outside of it until the wall of Aurelian was built in the third century A.D.—is seen a brick-faced structure of a similar kind (see Fig. 285). Similar decorative construction in coursed brickwork is carried out here in the most delicate fashion. The Corinthian capitals in this case are of moulded and cast brick, for the abacus with its very considerable projection and the corner scrolls; but all the rest of the capital is built up in courses exactly as are the shaft and the surrounding wall and entablature. The peculiar shape of Roman bricks, thin and large like what we are accustomed to call tiles to-day, enabled the builder to make the soffit of the projecting architrave between the columns of a single row of large tiles well secured to the wall behind them; and again to use similar large, flat bricks for the most projecting mouldings, as above the frieze, and forming a well-suggested cornice; a scheme often followed among these brick-faced buildings of late epoch.

The famous palace built near Salona by the Emperor Diocletian (about 303 A.D.) marks for us the condition of Roman architecture when near its end. The little town that has nestled in its courts and chambers, while the once splendid city of Salona has shrunk to a village, is called

286—Arched entablature, Damascus. (From photo.)

Spalato, from the Latin *Palatium*. The long sea-front (nearly 600 feet) is crowned, above a wholly plain basement, with a complete Roman order of forty arched openings with their flanking columns; but this long stretch is broken in the most startling way. First, there are three triply divided open pavilions, in each of which an entab-

287—Portico with arched entablature. Palace of Diocletian at Spalato. (From Adam.)

lature closes at top the two side openings, and then leaps in a semi-circular arch to close the middle one. This feature is found in Syria. Fig. 286 gives a broken entablature which exists at Damascus. In the sea-wall of Diocletian's palace these three pavilions alternate with two others, of single wide openings, each closed at top by an arch springing directly from the capitals. Let us take from Adam's book [17] other examples than the one above named of each of those non-classic features. The broken entablature, mitring with itself to form an arch, is found in the portico of the smaller rotunda (see Fig. 287). The arches which spring directly from Corinthian capitals are found in the Golden Gateway (Fig. 288) with the added peculiarity that each col-

[17] Ruins of the palace of the Emperor Diocletian at Spalatro in Dalmatia, by R. Adam, F.R.S., F.S.A., London, 1764.

umn rests upon a corbel, so that the whole arcade, columns, arches, and superstructure, is avowedly an ornament, and a minor and slight addition to an otherwise massive structure. It is evident that the Gre-

288—The Golden Gateway; Palace of Diocletian at Spalato. (From Adam.)

cian traditions, even as modified by the Roman seekers for splendour and size rather than refinement, are lost. We have to look forward to the coming in of the full mediæval spirit only a few years later, and the establishment of Romanesque and of Byzantine art.

This chapter may conclude with the presentation (Fig. 289) of a strange capital from Diocletian's palace. It is from the upper order of the large rotunda, the inner wall of the building formerly called Temple of Jupiter, now thought to be the tomb chamber of the emperor. The round cella is adorned with eight columns below, carrying res-

sauts which support eight columns in the upper tier. The first row are florid Corinthian, and those above present this curious mixture of Romanized Doric with Ionic volutes above a belt of leafage like the

289—Capital found in Diocletian's Palace at Spalato. It illustrates an unusual form of Corinthian Order. (From Adam.)

gorge of a column at Pesto, and having below that gorge a single ring of upright acanthus leaves. It is a specimen of that anomalous foliated decoration which takes infinite trouble to rearrange the accepted forms without thought of the possibility of independent designing. The epochs for such independent designing in architecture are few and far apart.

CHAPTER IV

MASSIVE CONSTRUCTION

IN the city of Rome and elsewhere in the heart of Italy there are found buildings evidently of the time of the Empire, built of small stones laid in mortar,[18] walls and vaults alike. These heavy masses of masonry are faced sometimes with small squared stones set diagonally (the *opus reticulatum* of Vitruvius), but far more commonly with hard brick. The Roman bricks are made in the form of rather large square tiles from about an inch to an inch and a half thick; and their continual appearance in the ruined walls about has given travellers the impression that the ruins of Rome are of brick buildings in the main. And yet Dr. Middleton[19] says with probable truth that there is not an ancient brick wall in the city of Rome, and that even a nine-inch wall was built of stone and mortar with the two faces of these thin tiles. The tiles are not set edgewise, but flatwise one upon another, their sides taking the mortar, and usually the square tile is cut in halves diagonally, so that the point of the triangle projects into the mass of the wall, and the long edge—the hypothenuse of the triangle—forms a part of the facing. The walls behind this brick facing were built of rubble, by which is meant pieces of stone from three to six inches in different dimensions, and rudely squared; and these were laid in strong cement mortar in great abundance, showing that the semi-liquid mortar was laid upon the bed before the stones were brought, and that these were then forced down into the fluid mass, which rose between their vertical joints and filled in above

[18] The use of the term "concrete," as applied by Dr. Middleton and others to this kind of masonry, is misleading. Concrete is used by the Roman builders in foundations and elsewhere; but the walls and vaults are built by stonelaying, just as modern walls are built by bricklaying.

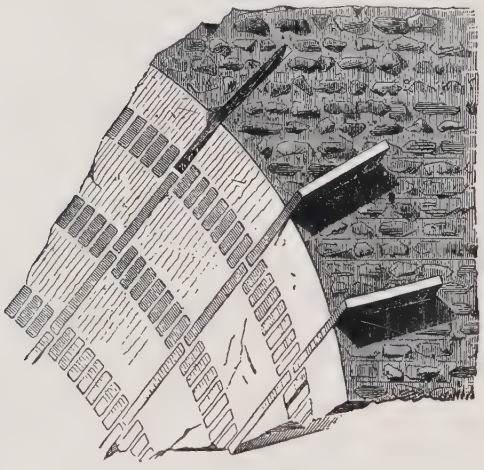
[19] The Remains of Ancient Rome, by J. Henry Middleton, Director of the Fitzwilliam Museum. London and Edinburgh, 1892, and later editions.

them in preparation for another course. The best known of these buildings are the Pantheon, the massive ruins of the thermæ of Caracalla and those of Diocletian, those of the basilica of Maxentius and Constantine; but all about in the Campagna are ruinous masses of building of this sort. The famous tomb of Cecilia Metella is a round tower of this nature, faced with cut stone; and as far south as Pozzuoli such buildings are found. Such work is not found farther south than Pozzuoli; nor is there any known as yet farther north than the

290—Ruins of Amphitheatre at Pozzuoli (Campania). (From photo.)

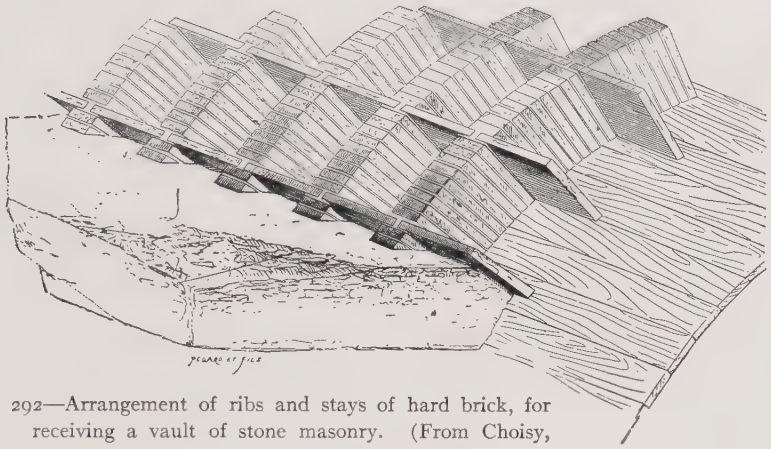
cities of Lombardy, except in one or two cases such as the famous thermæ of Julian in Paris, in which, however, slight differences of structure are noted. The most remarkable feature in all this masonry is the flat bedding of the stones, for nowhere do they follow the curve of the vaults; even an arch in a comparatively thin wall is built as if a solid wall had been carried up first and then the round-headed opening cut through it: arch construction in the sense used in Chapter II of this Book can hardly be said to exist in so solid and uniform a mass. The only exception to this is the presence of the discharging arches of brick which are seen everywhere coming flush with the brick facing, and puzzling the student very much by their apparent inutility in work so solidly constructed. Fig. 290 shows a part of the ruined amphitheatre at Pozzuoli, and there are seen large patches of brick facing, great masses of rubble-stone and mortar, masses of the wall from which the brick facing has been torn away, and, on the left, a patch of wall faced with *opus reticulatum*, small stones in diagonal checker. The smooth stone-work in the middle of the picture, and of course

the walls facing the underground passage, are modern. This picture is given merely to explain the aspect of these ruinous masses: and a similar view may be had in any one of the great ruins of Rome except where modern restorers have faced up walls with brick-work to keep them from complete ruin. It is necessary to explain the working of the system. Fig. 291 shows a section through such a wall, at the springing of the vault. As long as such a wall is being carried up vertically, there is no serious problem involved; the mason may build up his brick facing a few inches higher on each side than the last finished bed of his stone masonry, and into the pocket, thus prepared, may throw his semi-liquid mortar and then proceed to lay, with forcible pressure, the stones which he has at hand, upon and into the yielding mass. But when the curve of the vault begins, he must have a centring to guide him. The peculiarity of the Roman work was, then, that the wooden centring was made light and slight and only sufficient to resist the pressure of a skeleton vault of bricks, which vault of bricks was to take the full weight of the massive stone masonry filled in upon it between its ribs and ties. In other words, a light wooden centring was used for the construction of a light brick centring, and this latter framework was to remain permanently in place, supporting the stone-work until the mortar hardened, and remaining there for ever to puzzle generations of students. Fig. 292 shows a number of these brick ribs in process of construction, and shows how the larger tiles hold one rib to its neighbour. There is, however, another method given in Fig. 293. In this the tiles are built into a thin arch which, thin as it is, is able to bear the weight of the masonry while the mortar dries. It is not uncommon to see a double shell laid in just this way of two thicknesses of tiles. It is evident, also, that the two systems may be combined.



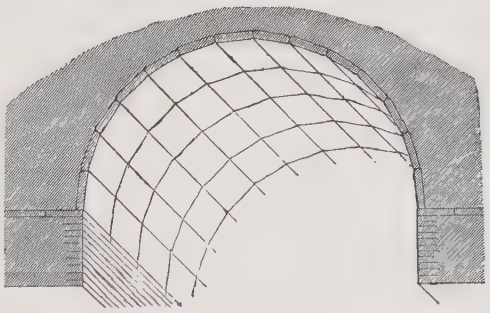
291—Masonry of small stones bedded in mortar, with ribs and stays of hard brick. (From Choisy, Bâtir.)

When it is a cupola which must be built, the lay-out is more complicated. It is true that each horizontal ring of masonry is self-supporting, acting everywhere as a horizontal arch, and safe not to fall into the space below: but architectural effect requires a smooth



292—Arrangement of ribs and stays of hard brick, for receiving a vault of stone masonry. (From Choisy, Bâtir.)

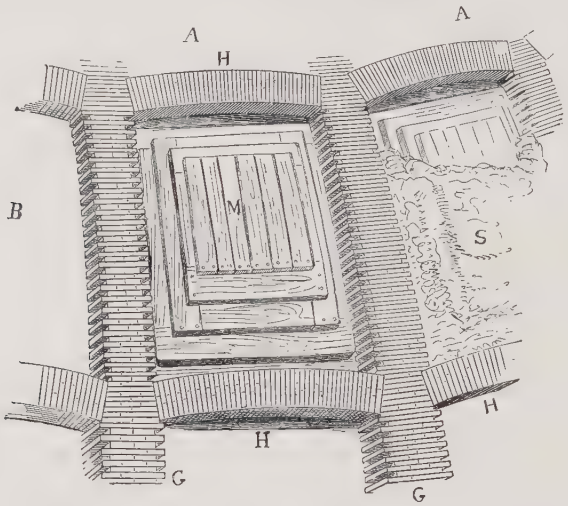
and uniform curve, horizontal and also vertical, resulting in a true cup-shaped hollow. But this result can be got by using a series of narrow, open, slight frames, like that shown in Fig. 215, which frames would be set up on the circle marking the base of the dome. Suppose that we divide the cupola into twenty-four bays; we mark off, on a circular support just within the future shell of masonry, twenty-four spaces, the dividing lines between them being all radii of the circle. We prepare at least four such frames as those shown in Fig. 215, and set them up, one on each of four of those radiating dividing lines. We build a brick rib, *G*, on each one (see Fig. 294), and we spring from rib to rib light arches, *H H*, either flat or, as shown in the figure, segmental of very slight curvature. Now it is the most common decoration of such a cupola to build it with caissons or deeply sunken panels: and a preparation for this is seen in Fig. 294, where



293—Permanent centring of hard brick, carrying solid masonry. (From Choisy, Bâtir.)

M is a boarded-up mould or form upon which the mortar-masonry, or fine concrete, or pure mortar, *S*, is piled up, taking an exact hollow compression of the mould. Finally a solid masonry cupola is built upon all this brick and mortar frame. It is somewhat in this way that the great dome of the Pantheon was built, the largest one in existence, and perhaps the only one that is not cracked.

It was formerly assumed that the Pantheon was of the time of Augustus, because of the inscription on its portico, showing that it was erected by Marcus Vipsanius Agrippa; and the inference was that

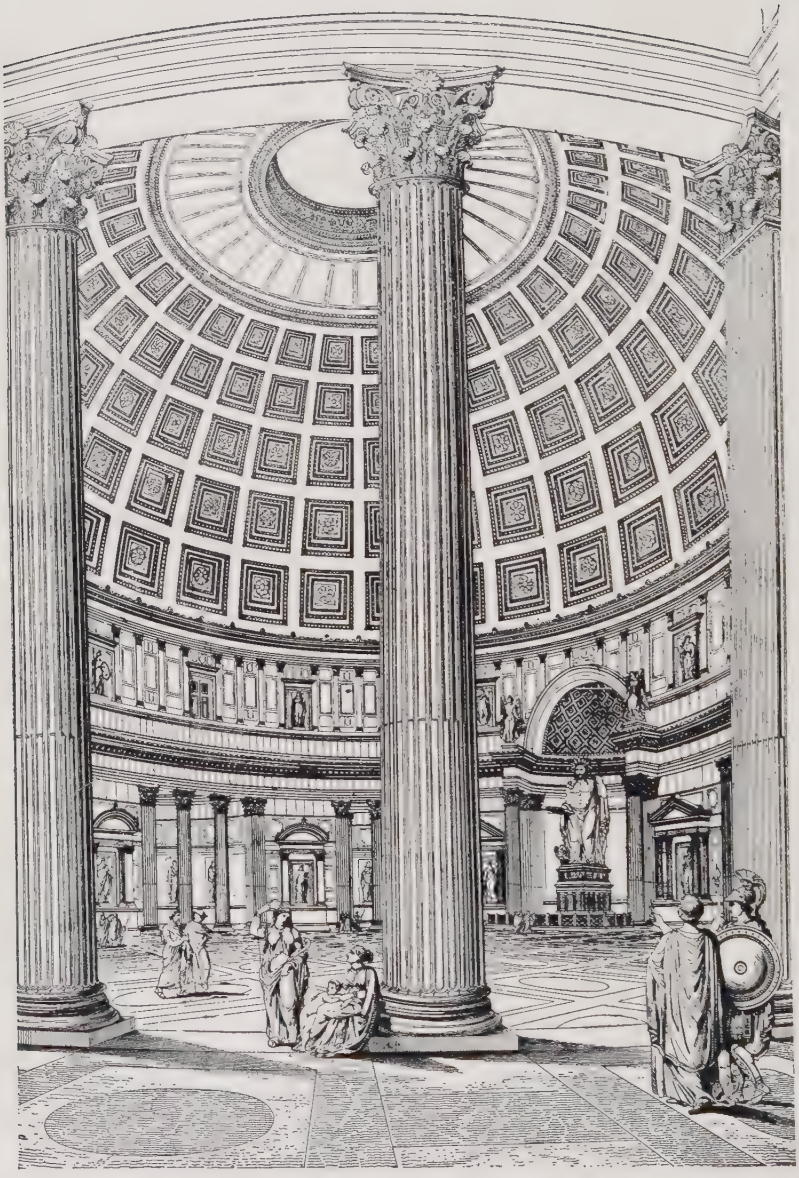


294—Preliminary construction of large cupola, with ribs and stays of hard brick. (From V.-le-D. Dicty.)

this solid way of building was known in Rome throughout the Empire. It is only since the discovery by Mr. Chedanne, a French architect, that the facing bricks of the Pantheon vault had stamps of the time of Hadrian, that archæologists have come to the conclusion now held, that it was only at the beginning of the second century that this system obtained in Rome. Whatever the columned portico of the Pantheon may have been at first, it is not a part of the same design, the same plan, under which the rotunda was built. That rotunda cannot be earlier than 120 A.D.; and this conviction agrees with what had been noticed before, that Vitruvius, writing in the reign of Augustus, never once mentions this kind of building in mortar masonry with brick facing, and was apparently ignorant of the use of hard brick. The *lateres*, of which Vitruvius speaks continually, are to all appearance sun-dried bricks like those of Egypt. The introduction

of hard-burned bricks was perhaps synchronous with a fuller realization of the surpassing excellence of the cements furnished by the volcanic soil of central Italy. The result of this invention, or of this introduction of an Eastern process, was to make building on a great scale easy to such engineers as might control labor and material in abundance. You could not build in this high Roman fashion in a small community, or as a private person controlling but few workmen and but small accumulations of material.

The cupola of the Pantheon and the groined vaults of the great halls named above can have but little thrust. The dome of the Pantheon can have little more horizontal pressure on its walls than if it were a crockery bowl turned upside down. The thickness of its mass is in proportion to the diameter of the hollow curve, and all it needs is adequate vertical support to keep it standing indefinitely. Fig. 295 shows the interior of the Pantheon according to a restoration which would not be considered wholly accurate by modern archæologists, but it is given here because showing in a sufficient way that which is really fine in this building. Its vast horizontal curve—the effect of a rotunda 142 feet in diameter—is strangely supported and confirmed by a height almost exactly the same. The visitor is not aware, perhaps, that the whole building corresponds very closely to the dimensions of the sphere of which the cupola is the upper half, but perhaps that fact increases its ineffable charm. Another beauty is the abundant lighting from above, for the only daylight in the building (except what may come through the door when that is open) is admitted through the oculus, the round eye at the top, 28 feet in diameter, around which the original bronze cornice is still in place. There is no interior in the world more impressive than this; and probably one reason for its beauty is the fact that its overwhelming mass reduces the columnar system to mere decoration—to ornament simply. It is true that the larger columns which seem to support the entablatures on the ground story, and which were thought once to be no part of the structure, have been proved by recent too hasty restorations to have been necessary to the stability; the fact remains that the Greco-Roman orders as used here are reduced to ornament in the sense in which foliated sculpture or scroll-work is ornament. The contest between the apparent columnar structure and the real vaulting, or the massive mortar-masonry, a contest which troubles us so often in the Roman work (as in the use of the Roman Order so often alluded to here),



295—Interior of the Pantheon, Rome. Isabelle's Restoration.

disappears when the actual structure is so vast, so simple, and so effective in its mass. Fig. 296 is the plan of the Pantheon, taken not far above the pavement: the left-hand half showing the actual wall, that which supports the dome; the right-hand half giving the architectural plan, with columnar decoration. The system is to build a wall about 20 feet thick, but to open in it many comparatively large chambers. In this way a lighter building and a much smaller consumption of material become possible, while the need of a broad base and great horizontal dimension generally is served.

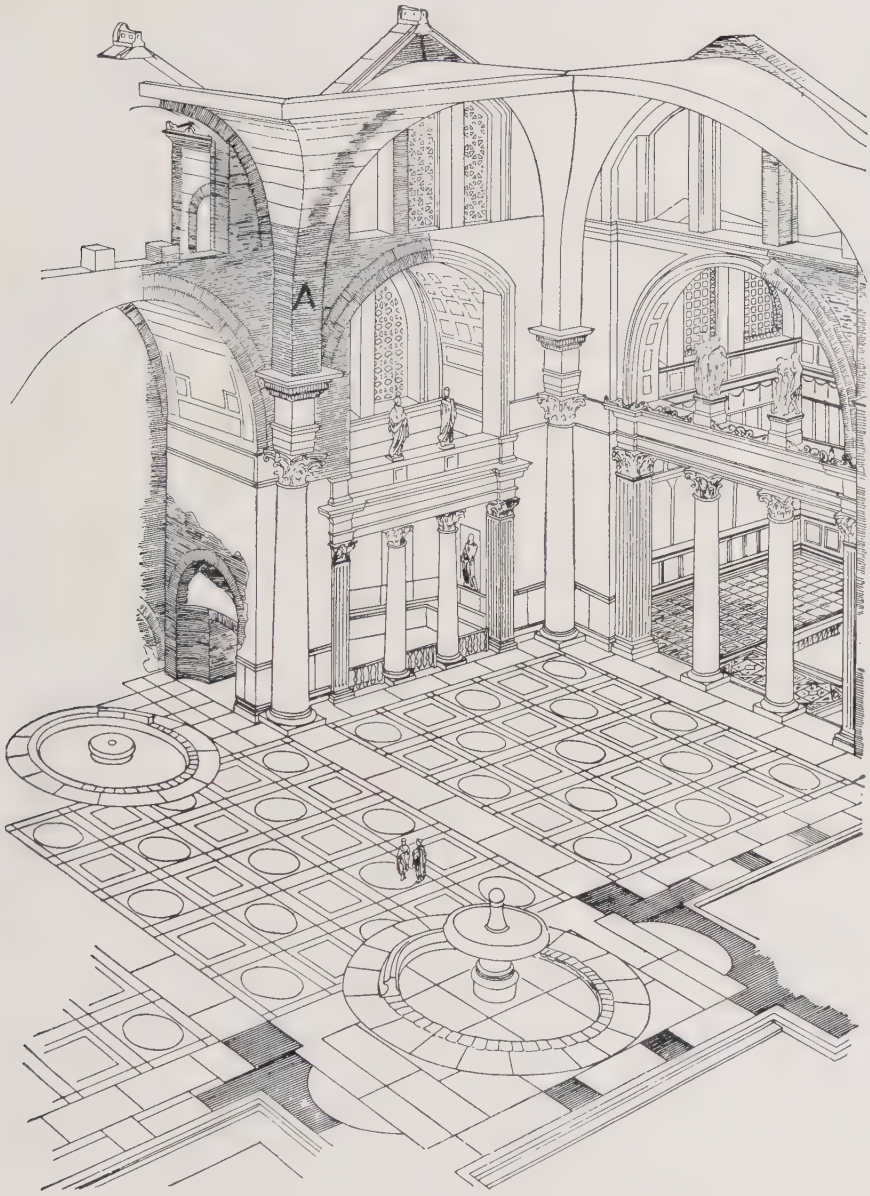
Fig. 297 is Viollet-le-Duc's excellent scheme of restoration for the great hall of the baths of Caracalla.[20] The building is so far complete that the modern architect had merely to supply in thought the decorations—the magnificent granite and porphyry columns which had been appropriated during the Middle Ages and the fifteenth century by this or that pope or cardinal; the marble entablatures which crown them and the pavement with its fountain basins. Here the assumption is that the great columns in the corners of the hall and elsewhere, seeming to support the huge groined vault which rises from them, are unnecessary to the stability of the structure. The groined vault springs from eight abutments, one of which is marked in the cut with the letter *A*. These abutments are of a projection so slight from the massive piers which they adjoin, that they can be corbelled out from those masses without difficulty. There is no call for the prolongation of that abutment downward to the foundation of the building. The piers are ponderous enough to take any weight which can be piled upon them, and it is not hard to combine this projecting abutment with the mass behind it. We are to imagine, then, the whole vertical weight of the ponderous roof carried down to the foundation, indeed, but by what look like walls and are really piers of enormous thickness; and we are to imagine the huge shaft of polished green or purple granite brought in after the building is nearly complete, and slipped into

[20] Restorations of the thermæ and the interiors of the great halls, with their construction and decoration, have been given by several archæologists, such as A. Blouet (Les Thermes de Caracalla, Paris, 1828), E. Paulin (Les Thermes de Dioclétien), Auer, Hülsen, and Rauscher. Those by Viollet-le-Duc have the advantage of that author's strong feeling for construction and his knowledge of how work was done at many epochs and how it could be done under different conditions. On the other hand, he worked at a time less critical than the present, his work being all done before 1878, and he was rather hasty in the assumption that what seemed to him natural and proper was certain—and this even in the matters of remote times and lands.

place as a wholly decorative adjunct. Fig. 298 is a view of the same great hall as it now stands towering above the southern quarters of Rome. The building has been conducted exactly as the amphitheatre of Pozzuoli (Fig. 290), only on a grander scale. Two of the

296—General plan of Pantheon; on the left, the structure alone; on the right, the columnar decoration. The pale tint shows the earlier walls of Agrippa's thermæ. (From V.-le-D. Entretiens.)

abutments of the great vault are seen in the upper part of the picture; the one on the right, throwing a sharp-edged shadow, is the same member as that one in Fig. 297, which is marked with the letter *A*. It is easy to see how completely this abutment forms a part of the massive pier behind it, for it projects from the



297—Great vaulted hall, thermæ of Caracalla, Rome. Viollet-le-Duc's restoration. (From Eu. A.)

wall and overhangs by at least 6 feet, and has done so for a thousand years.

In the thermæ of Diocletian there exists the Church of S. Maria degli Angeli, which is nothing more than the largest hall of the baths,

probably the tepidarium, cared for and more or less restored in the sixteenth century in order that it might serve as a church. Whatever inaccuracies in detail there may be, and of course there are many, the building still suffices to give us an idea of the intended aspect of one of those great interiors of the late Imperial time (see Fig. 299). The columns are of purple granite, whether true porphyry or not, and the

298—Baths of Caracalla, Rome. Ruins of the great hall, probably the tepidarium, with the swimming baths beyond. (From photo.)

responds, the great square pilasters in which the veining of the stones is so obvious in the photograph, are of dark green serpentine; a certain number of them are painted imitations. The frieze of the great entablature is also of green veined stone. The capitals are of marble except as they have been repaired, and it is not clear whether these and the other sculptured parts were originally painted and gilded. Painting and gilding were freely used in the roof; the old subdivision of which by deeply sunken caissons has nearly disappeared. The chief difference between the ancient hall and the modern remaking of it is in the fact that the floor is now 8 feet higher than in antiquity. The level of the soil has been raised throughout Rome, and this

change is extended to the interior of the church; so that the real bases of these columns and pilasters are beneath the new marble pavement and far underground, and what appear to be bases are wooden rings carefully adjusted to the shafts.

The most impressive of the huge buildings of this later massive construction is the basilica of Maxentius, completed by Constantine, and therefore a building of the latest period of prosperous energy in the Western Empire. Maxentius was holding Rome and Italy, and had his supporters largely among those who sought to preserve or regain for the city of Rome her ancient supremacy in the Empire. His

299—Great hall in thermæ of Diocletian, Rome. Restored as a church. (From photo.)

power lasted only for six years, ending in 312, and his rival, Constantine, who was in a way the champion of the provinces, and who was to remove at a later time the very capital of the Empire to Byzantium, was master of the Western Empire from 312 to 323, the latter being the year of his mastery of the whole Roman world, east and west. We are to think of that great basilica as being begun and completed dur-

ing the years from 306 to 325 or thereabouts, a period when sculpture, always the most important and most energetically pursued of the fine arts of classical antiquity, was decaying so rapidly that it is impossible to find a single piece of delicate and skilfully handled human sculpture of this period. The decline in style and also in the knowledge of the human form was so very rapid that it remains inexplicable. And yet the great achievement involved in the completion of this basilica is to be recorded. The building is somewhat of the plan of that great hall of the baths of Caracalla, shown in Fig. 297. The great nave, about 83 feet wide, is so far diminished in width by the columns which stand out free from the wall that the vault above was of only about 70 feet span. It was carried to a height of 125 feet from the floor to the crown. On either side of this great nave were three chambers, the three together occupying the whole length of the nave and forming, as it were, an aisle to the nave, because having the roofs much lower, with windows opening into the nave above these lower roofs. These side rooms are also vaulted, and it is the vaults of those of the north flank which now tower above the Sacra Via at the east end of the Roman forum, while fragments of the great central vault lie upon the ground.

It is interesting to compare this building, the exterior design of which we do not know, with the great interiors of later times. If we apply the section of the great cathedral at Cologne to the section of the Roman basilica, in order to show in what manner they compare one with another, it will appear that the vault of Cologne reaches a somewhat higher level than that of the Roman building. The mediæval vault is light and elastic, built with stone ribs filled in with light stone masonry, whereas the basilica is of enormous weight and massiveness. The Gothic building needs constant care; the ancient structure could be destroyed only by the deliberate acts of men. The loftiest of all Gothic naves, that of Beauvais, is 42 feet 6 inches wide, and the broadest Gothic vault is that of Gerona in Spain, 73 feet—but that is wholly exceptional and was a deliberate *tour de force*, built after the late Gothic period had passed. The dignity which comes of great solidity and of endurance is all in favour of the Roman example, and although we have not a clear knowledge of what its minor proportions were, or of the manner in which its decorative treatment aided the effect of the interior, we can understand that all that is fine in the nave of S. Peter's Church at Rome, 88 feet wide and 148 feet high, was obtainable in the basilica of Maxentius, whose dimensions are nearly as great.

Fig. 300 is a photograph of the so-called Torre degli Schiavi, which stands two miles or more from the Porta Maggiore in the extreme eastern projection of the walls of Rome. It is generally called a tomb, but may well be a round temple connected with a great villa. The structure is like that of the baths of Caracalla, stones laid in mortar and faced with hard thin bricks, but there are parts of the ruin which show a more independent use of the bricks, suggesting that they were

300—Tomb in the Campagna of Rome, called Torre degli Schiavi. (From photo.)

easier of transport to the place than stones would be. The photograph shows clearly enough the massive character of the structure, which we may call either a round tower with very thick walls, or a solid cylindrical mass with a relatively small chamber in the middle. Other round towers of the kind and standing in the open Campagna have been used as fortified posts by the warring barons of the Middle Ages. Such a tower is the well-known tomb of Cecilia Metella, which has a ring of forked battlements, contradicting its original character. There is little doubt that the roof of each of these massive cylinders was a generally conical mass. The famous *Castel di Sant' Angelo*, built for the mausoleum of the Emperor Hadrian, was roofed in this way. It is not recognizable now because two stories of habitable chambers and a complete system of galleries of defence have been piled upon the massive tower of the second century.

CHAPTER V

THE PLAN AND DISPOSITION OF LARGE BUILDINGS

ROMAN architectural design is peculiar in this—that it is concerned little with refinement—much with splendour and a large utility. Modern architectural artists are found who approve and admire this tendency—who confess to caring less for the Grecian delicacy than for the Roman bigness and fitness.

"You, the Greek, spend immeasurable pains, thought, and time in perfecting the curve of an echinus and an entasis, and upon the exact measurement of the inner and the outer intercolumniations, and when all is done you have only a parallelogram, with six and thirteen columns on the sides, and a slightly different set of delicate proportions and invisible curves from what had been brought into shape before. I had rather be the Roman who undertakes an elaborate plan, with oblong halls high and low, rotundas large and small, corridors and porticos in subordinate places, all fused and compacted together: with walls of many thicknesses, vaults of all spans up to a hundred feet, doors, windows, hypocausts, drains, in unexpected and unfamiliar places, proportions startling, perhaps, but strong and significant."

Such thoughts are confessed in the twentieth century by men of truly artistic and truly refined sense of design.

It is of all conditions the most vexatious and hindering that we cannot discuss all or many of these important questions in the case of some one great building in which they meet together. But the heirs of the great empire have thrown away their inheritance. Nowhere is there a large bathing establishment, a prætorium, a great temple with its subsidiary buildings, a forum with its public offices and private shops, in such condition that the student can find in it the general and the detailed, the practical answer to requirements and the artistic

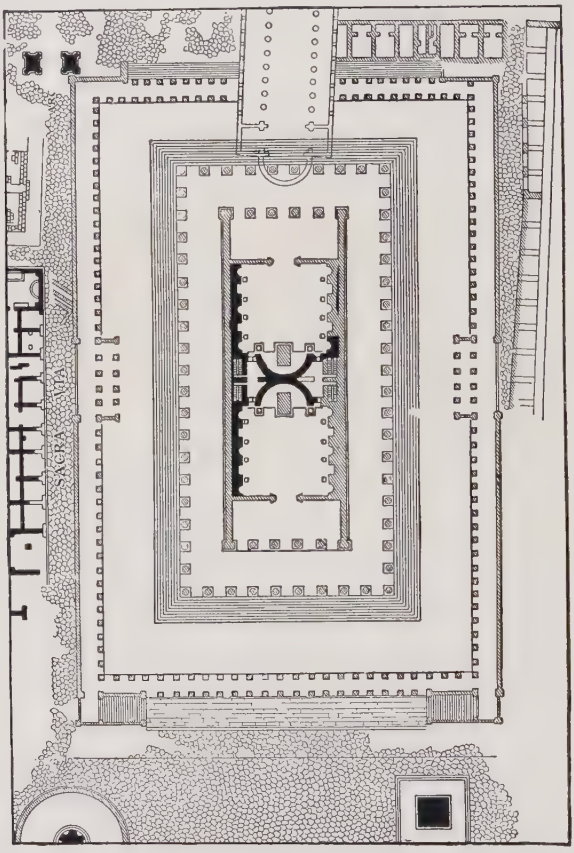
touch of the designer. And therefore we have to consider the general design of the Roman builder in Chapters II, III, and IV, his surface decoration in Chapter VII, and here the system of planning upon which all his design in architecture was based. Chapter VI deals with the planning of the smaller public buildings and the private houses.

The double temple of Venus and Roma is known to have stood near the Colosseum, and just east of the basilica of Maxentius and

301—Ruins of double temple of Venus and Roma. (From photo.)

Constantine. The ruin and the open space shown in Fig. 301 are what remain to us. The arch of Titus is on the left. Next to it is the old wall and gateway of the Farnese Gardens, in which excavations had been going on since the sixteenth century, to the enriching of the Farnese family and their museums in Naples and elsewhere, until the Italian royal government took possession after 1870. That still pleasant garden-spot covers palaces of the best period of Roman imperial art—palaces explored indeed, and measured up, but only in part cleared of obstructions. On the extreme right are the great vaults of the basilica of Maxentius—those of the northern chambers only, with a scrap of the higher vault of the central nave. In the

centre is one of the two apses, set back to back, of the temple of Venus and Roma, built in the massive way, as described in Chapter IV of this Book, and roofed with a semidome having lozenge-shaped caissons. This massive apse is all that remains of the sanctuary dedicated to the goddess Venus. Beyond this is the square campanile of S.



302—General plan of Temple of Venus and Roma. Outer peristyle about 500 feet long. (From Lanciani, Ruins.)

Francesca Romana, whose church covers the ground and utilizes a part of the walls of the western half of the double temple. In the extreme foreground is the ponderous retaining-wall of solid masonry supporting the platform of the temple: and, just beyond it, the two dark bands on the ground mark the foundations of the inner peristyle of columns and the continuous belt of steps which formed their stylobate. Let Fig. 302 be the reconstructed plan. It shows an old Grecian idea made more elaborate: a high platform about 400 feet wide by

500 feet from east to west, an outer portico enclosing the whole of that space; an inner elevated stereobate which, if measured to the bottom step, is about 200 × 375 feet, a peristyle of fifty-six columns of gray granite, and then the double cella, having two porches each tetrastyle in antis, and each leading to a short, broad, vaulted hall, and an apse with raised floor.

Now, all this, except the building in mortar-masonry and the idea of a vault, might have occurred to a Greek. Perhaps it did occur to some of the engineers employed by the successors of Alexander in Antioch or Seleucia or Damascus. The Romans have little claim

303—The Tabularium, cross section on line N.W. and S.E.

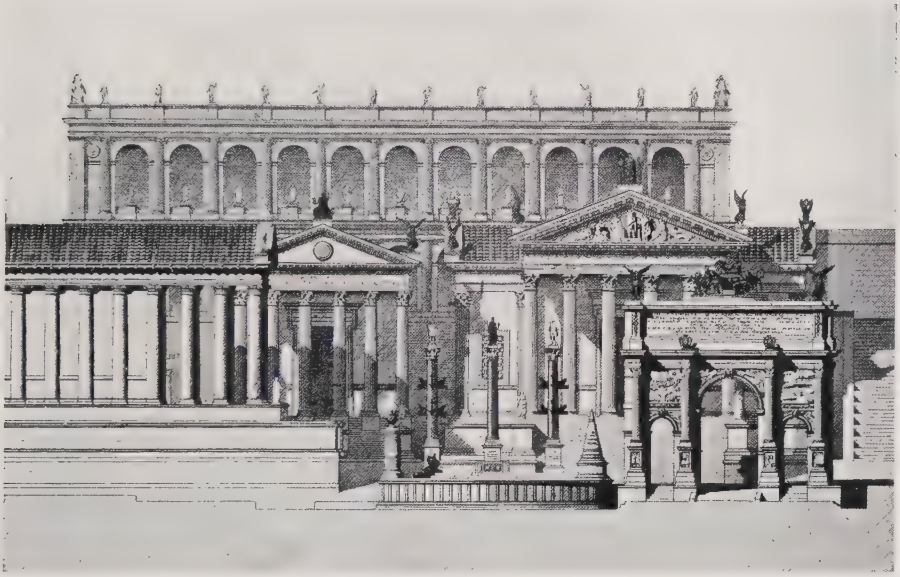
to originality as builders or as makers of plans: what they knew best was how to appropriate the ideas, as they appropriated the wealth, of the Mediterranean world.

Let us take, then, the case of a building of some variety and complication of plan. Fig. 303 is a section through the tabularium, as restored in imagination by an able designer. The section is taken along a plane running nearly north-west and south-east, and normal to that towering front which rises above the Forum, and also to that seventeenth-century façade which faces the Campidoglio. In the section, the Forum is on your left and the high and steep retaining wall of solid stone marks the steep declivity of the Capitoline Hill on that side. The square of the Campidoglio is beyond you on the right, and the building originally standing there is restored in a conjectural way from a few vestiges. The theory of the design, one sees, is that there

was in the middle an open quadrangle, a peristyle with roof sloping inward, and a compluvium,[21] exactly on the principle of an atrium of a Roman house. The floor of this open court was as high as any part of the Capitoline Hill except the most southerly (south-westerly) point or crest, where stands the Palazzo Caffarelli and where stood the Temple of Jupiter Capitolinus. The corridor which surrounded this and the open loggie fronting upon the Forum are not to be considered here as to their utility, because that is not within the possibility of modern description. The purpose of this allusion to the building is to explain the way in which the Roman designers grouped together buildings, and the larger halls of what may be considered one and the same building. It would be a mistake, however, to carry too far our criticism upon the result, because in a crowded city where generations succeeded one another and did not resemble one another, where wealthy proconsul, ambitious popular leader, and later Augustus or Cæsar followed each the other through a course of deliberate changes, each bidder for popularity disregarding very much the works of his predecessors in pursuit of his own ambitious schemes, a result is sure to follow which could not be foretold and which would not be approved. Thus Fig. 304 shows the end of the Forum as it would be to a person who might have stood, in the second century A.D., and looked northwestward. He would have seen the Tabularium rising high above the buildings which stood, and which stand in their ruined condition, in the Forum, or at least on its lower level. The building on the left is the Temple of Saturn, the colonnade of which is shown in our Fig. 264. The one next on the right is the Temple of Vespasian, backed up against the retaining wall and the basement of the tabularium in such a way that one of the doors which led into the Forum, and at which terminated a long flight of stairs, was stopped up and condemned because of the crowding of the temple upon it. Again, to the right is the Temple of Concord, one of those Roman buildings of sacred purpose which are not planned in the orthodox way. The Temple of Concord was longer from left to right as you enter it than it was on the axis of the doorway; that doorway being in the middle of a long side, with the hexastyle portico projecting at right angles with the length of the building. Between us and the columns of the Temple of Concord is the arch of Septimius Severus shown in our Fig. 281. In the same plane and partly hiding the Temple of Saturn should be

[21] Compluvium: See the explanation of the atrium in Chapter VI.

the arch of Tiberius; but no one knows its design. On the right of that again are the steep stairs that climb the height from the Forum to the capitol. In the middle, the low wall retains the platform for speakers, the rostra,[22] with two rostral columns, one on either side, adorned each with the beaks of ships, and a memorial column between. On the right is seen, though it does not stand on the front



304—The Tabularium as reconstructed; seen beyond the buildings at north-western end of Forum (see Fig. 303).

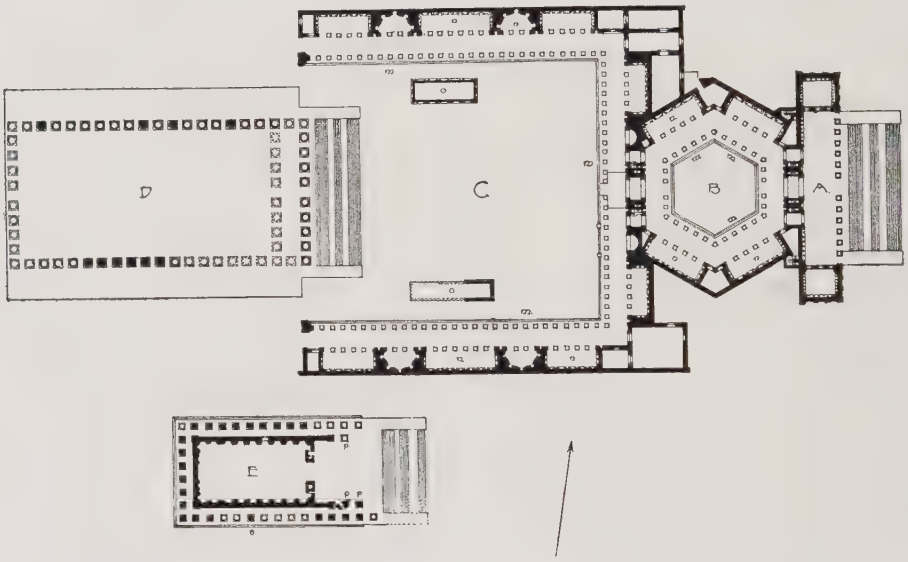
of the rostra as it seems to do, the strange monument called the *umbilicus urbis Romæ*, the ancient monument replacing one still more ancient which was assumed to be the centre of the city. The round column crowned with a sphere and having inscriptions on the side is probably meant for the Golden Milestone, from which the military roads of the empire were supposed to radiate, and from which the distances on those roads were laid down.

It is not asserted that all this restoration is inevitable. Every separate scholar who has given his attention to the subject will disagree in one or more particulars from this or that detail, but there is enough verisimilitude in it to help understand the impossibility of

[22] Rostra; or perhaps the Græcostasis according to the opinion of the restorer. That platform for foreign ambassadors has been assumed to be located in this place, but the balance of recent opinion is in favour of this being the rostra even in imperial times.

finding a logical plan intended for the best architectural effect in any of these great crowded centres of affairs. Let us take, then, a stately lay-out of large and costly buildings, temples, erected at imperial order, in a town so little crowded that there was room for what the designers wished.

Fig. 305 is the plan of the group of temples and court-yards at Baalbek, the ancient Heliopolis. At the extreme eastern end is the



305—Group of temples and courts at Baalbek in Syria, the ancient Heliopolis. A, entrance porch with three gateways; B, hexagonal court; C, great court about 350 feet square; D, larger temple, called of the sun, or of Helios; E, smaller temple, called of Jupiter; mmm, peristyles of which only traces remain; nnn, colonnades partly preserved. (Drawn by E. P. C. from Jahrbuch.)

great portico of entrance, at the top of a lofty flight of steps, some forty risers in the original design. This portico was dodecastyle, the antæ in this case forming the corner piers only of two large square buildings containing halls of reception, and opening by separate porticos in antis upon the platform of the great approach. In the middle of this portico on the west side was a doorway of entrance to the hexagonal court; but one who would enter it passed first through a covered loggia with a colonnade of four columns on the court itself. The dimensions of all this are very great. Thus the portico is 36 feet wide within the columns, and the doorway through which you pass from the portico into the hexagonal court is 17 feet wide. The hexagonal court itself has in the clear, within the walls and col-

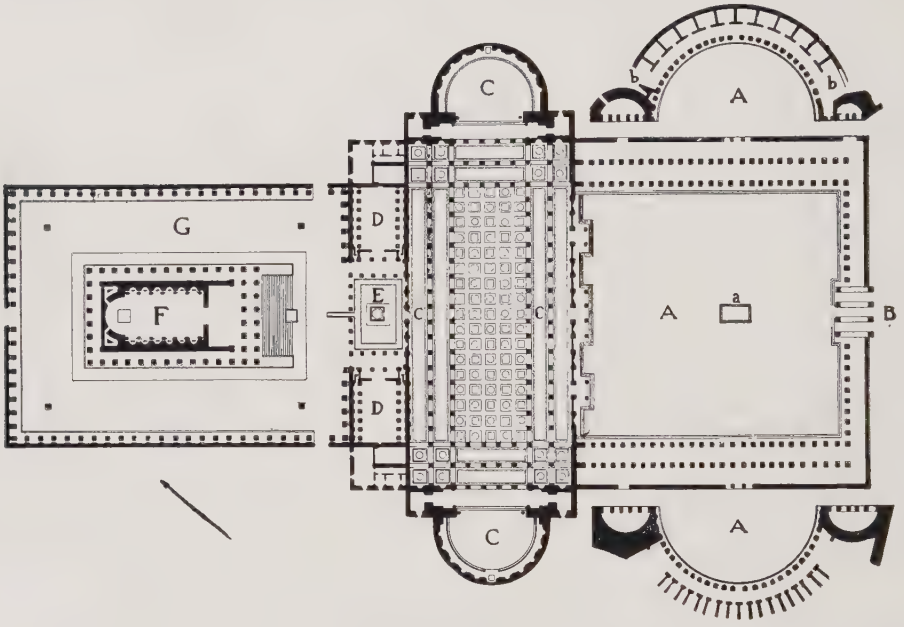
umns which form its façade on every side, a dimension of about 88 feet, and those halls, through one of which we have to pass to reach the uncovered court, are each one 60 feet long. The excavations of German archæologists since 1900 have revealed the existence of a rock-cut altar in the middle of this court and a hexagonal peristyle enclosing it, which is shown in the plan (Fig. 305).[23] Passing through the doorway opening at the west side of the hexagonal court, the visitor enters the great square court arranged, like the smaller one, with chambers of different dimensions opening from it, with separate colonnades of size and dignity enough to be important in themselves. This court, then, is in the clear and within these columned fronts about 400 feet wide from north to south, and somewhat longer from east to west. To the west of this are the columns of the greater temple; but this vast structure was never completed, and indeed there are no signs that a cella wall was ever begun.

Another temple, the magnificent smaller temple from which we have taken our Fig. 216, stands southward from the great temple and from the south-westerly corner of the square court. It is not quite parallel in its lines with the lines of those larger buildings, but indeed its magnificent proportions give it a wholly independent importance, and the strange thing about the whole conception is that so large a temple should have been built close under the shade, as it were, for it stands on a lower platform, of the vast temple which proved too much for the imperial masters of the world to finish. That greater temple, decastyle with nineteen columns on the side, would have measured 160×300 feet or thereabout, but what we have are six upright columns and the traces only of the rest. The purpose of our consideration of all this is, however, the question of the general plan, which seems to have had a very definite purpose so far as the portico, the smaller and the larger court and the larger temple are concerned, but which seems to exclude that magnificent temple, which alone has some independent existence to-day.

The group of the Imperial Fora in Rome, north-east of the *Forum Romanum*, and projecting away westwardly to a point beyond the Capitoline Hill, formed a wholly unmatched display of well applied cost and care, but this is for our imaginations alone. There are no such remains of these as there are of the Syrian group. Of all these

[23] See Zweiter Jahresbericht über die Ausgrabungen in Baalbek, in the *Jahrbuch* of the German Archæological Institute, volumes for 1901–2.

great conceptions much the most stately and probably the most beautiful was that of Trajan, for it stretched from south-east to north-west, a distance of nearly 1,000 feet with a width of 400, beyond which great semicircular apses reached far out into the artificially made space on



306—Forum of Trajan and connected buildings. Restored plan, partly conjectural. Drawn by F. C. K. from Lanciani's *Forma Urbis Romæ.*

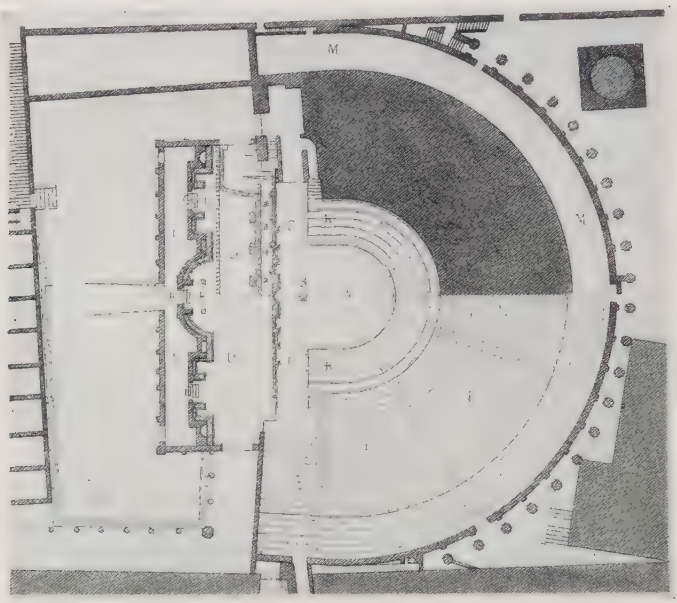
A. The Forum with peristyle.
B. Memorial Arch.
C. Basilica Ulpia.
D. Bibliotheca Ulpia in two sections with court E between.
E. Court with galleries, and Trajan's Column.
F. Temple of Divus Trajanus with high podium and peristyle.
G. Court of Temple, with peristyle.
a. Base of equestrian statue of Trajan.
b. Rows of shops or offices, apparently three stories high, the upper parts accessible from the higher levels of the Quirinal hill.

either side. Fig. 306 gives its general plan founded upon the map of Signor Lanciani.[24] To enter the forum in the most impressive fashion one would approach it at the centre of the south-eastern front, although this front would not be visible from a distance like the great portico at Heliopolis. The forum of Augustus crowded close upon it at that side, and you would pass up a narrow street between lofty

[24] *Forma Urbis Romæ* (an atlas of large-scale maps of the ancient and modern city, completed in 1901).

walls before reaching the arch of Trajan which formed the state entrance, so to speak, of the whole congeries of buildings. The reader will observe in this and in other details that the whole effect of the great mass of architectural and sculpturesque combinations was studied from within. It was, in a sense, an interior, although the greater part of it was unroofed. The great arch itself, finished after Trajan's death and dedicated to his divine memory, had its principal façade upon the great court, of which court it was not merely the entrance, but a part of the enclosure. The rest of the enclosure, then, was a double colonnade, outside of which was a solid wall, solid though pierced with great openings, and this colonnade must have furnished an open covered walk 45 feet wide, from which the open space about 300 by 500 feet could be seen; but we have no means of knowing what decorations, what fountains or flower-gardens filled that open space. The unimportant houses, churches, and streets of that quarter of modern Rome, rising from a surface often twenty feet above the ancient pavements, cover the traces of the magnificent monuments of the emperors of the greatest epoch, Augustus to Trajan. The equestrian statue of Trajan stood in it somewhere. In this way we account for three sides of the great quadrangle; but the fourth side was made by one flank of the Basilica Ulpia, that is, the basilica dedicated to Trajan, whose name, M. Ulpius Trajanus, is commemorated. This basilica was more or less an extension of the great court, although the pavement of it was raised to a somewhat higher level; and if some very sagacious modern students are right, this building also was open to the sky in the middle; at least it is not even guessed with any appearance of probability how the great nave, about 80 by 300 feet, could have been roofed. The double colonnade which surrounded it allowed of an upper story and of a flat roof in the true Greek manner, but while on the one hand there was no preparation made for vaulting the nave, on the other hand there is no evidence that it ever had received a roof of timber or of bronze—or indeed a constructional roof of any kind. Whether partially or wholly roofed, the interior would be less brilliantly lighted, and the partial mystery would aid in the effect of the bewildering group of marble columns—at least 108 visible at once. Finally, by passing through the basilica from south-east to north-west, an open court was reached, in the middle of which stood the famous Column of Trajan, illustrated by our Fig. 260 and in part also by Fig. 259. On either side of this was a

building which we know as a library. Beyond it and still going northwestward, there stood the temple of the deified Trajan with its high podium approached by a flight of steps, its octostyle colonnade, and its cella adorned with a double colonnade in the interior. This temple, however, was not left open to view from the streets of the town. The system of courts includes it, and a peristylar enclosure occupying



307—Plan of larger theatre, Pompeii. (From Gail., Monuments.)

half as much room as the great court itself which we have described, surrounded it again and had its full decorative effect on the inner side toward the temple and not visible from the city street.

The question in all this is whether the modern mind is capable of perceiving the full grandeur of such a scheme. What living man has ever seen a great combination of marble columns producing their varied lights and shades and leading to an inevitable sense of boundless magnificence—what man has seen even one-tenth part of that in any building which exists on this earth? What hypostyle is there—not of a thousand columns, but of fifty? Where would one go to see the full effect of the Greco-Roman colonnade doubled and redoubled in a series of such roofed interiors and open courts?

The Roman theatre differed from that of the Greeks in details only. Fig. 307 is a plan of the larger theatre at Pompeii, in which

there is shown on the right the plan of the theatre as looked upon from a distance above the auditorium. That on the left is of the nature of a horizontal section cut through the auditorium and the stage at the level of the first curved corridor. *A* is the orchestra, and *B* the altar, that which in a Greek theatre was always dedicated to Dionysos. *C* is an open gangway which led to the orchestra from without, and from which, in this theatre at least, steps led up to the stage, raising the question whether there was frequent change of place between those two divisions of the actors' part of the theatre. The narrower passage to a short flight of steps, and by these to the corridor between the seats *K*, and the seats *L*, is shown; and both these doorways are plainly seen in Fig. 308. *D* is the stage itself; *E E* are entrances for different actors according to the rank they held in the play and according to the message which they had to deliver. Both in the Greek and in the Roman drama those details were matters of fixed convention; and when an actor appeared on the stage the character of his dress and of his mask, the door through which he emerged upon the stage, and the point at which he stood in delivering his speech, were enough in themselves to impart to the audience an idea of the character of his part. *F*, *G*, *H* mark the connection between the actors' private rooms and the stage, the theories as to which are numerous and contradictory. These letters, furthermore, distinguish the scene wall, an architectural façade differing in different theatres and evidently an object of great care among those Roman designers who gave their attention to it. It was a permanent stage setting of solid material. *I* is the space reserved for the actors' dressing-room, etc. In the auditorium, *K* is the lowermost of the three main divisions which are separated from one another by horizontal curves. For each division is a horizontal passage called *præcinctio*. The Latin name for the lowermost division was *ima cavea*. *L*, then, is the second division of the auditorium, the *media cavea*. *M* is a vaulted passage, a broad corridor nearly on the level of the ground, and the space above it, as shown below, containing concentric rings of seats like those of *K* and *L*, was called the *summa cavea*.

Fig. 308 is a view of this theatre from a point nearly north, showing the wall which formed the front of the stage, with the curious steps leading up from the orchestra; and the entrances from the Triangular Forum marked by the dark archways in the middle of the picture, the stone seats still in place for a large part of the ima cavea,

the broad slope of the media cavea clearly marked, the præcinctio separating this from the summa cavea which is seen to be separated from the second and largest division by a stone wall of considerable height.

The Romans used roofed theatres also, but as no one of the roofs has been preserved, even in part, there is nothing but dispute about the probable structure of these buildings. Those theatres, too, that

308—The Larger Theatre, Pompeii. (From photo.)

have been roofed are hardly differentiated from the open ones except by their smaller size and by the provisions for means of lighting by windows. If we had any one of them with its walls complete, it might be possible to restore in imagination the interior of it. Much the most important and also the best preserved of these theatres is the Odeion of Herodes Atticus, shown in Fig. 229.

The amphitheatre in its general form has been treated briefly in Chapter II of this Book, in connection with the building in cut stone and with arches. This class of buildings in its origin seems to have been confessedly a double theatre, two theatres back to back; but the elliptical form was adopted early in the Imperial epoch, and this at once gave to the amphitheatre a character of its own.

The preparations necessary for the elaborate presentation of combats between men and beasts, the sword play of gladiators, the various tragedies of minor war with actual bloodshed, required a great deal of space and very careful planning, which in a theatre without a

stage and with an audience seated all about the arena, had to be underground. In recent times many of the great amphitheatres have been searched and excavated with care, and the apparent purposes of the different chambers, corridors, and cells underground have been indicated in elaborate treatises. Fig. 309 shows the view of the amphitheatre of Old Capua (a few miles outside of the modern town), in which there is to be seen an outer corridor from which cells open outwardly again, pens for the wild beasts, and store-rooms of many kinds. In this way the whole space within the podium or wall separating the arena from the seats of the spectators is seen to be taken up by those underground equivalents of the modern space behind the scenes. Fig. 310 shows what now exists of the interior at Arles (Bouches-du-Rhône) in southern France. The building was used as a fortress for many years; and at a later time houses were built over it.

In the neighbourhood of a great city of the Empire, the permanent circus was an important and characteristic Roman building. The arrangement of seats was not unlike that of the amphitheatre, the same

309—Amphitheatre at Old Capua, Campania. (From photo.)

proportions of podium giving it relief above the level ground where the sport was carried on, the same general character of a sloping surface occupied by stone steps which served also as seats, the same system of gangways, horizontal or following the slope as in the theatres, or entering by arched openings as in the amphitheatres. These buildings, like the amphitheatres, low, and of fixed and settled form, without roofs, without windows, the inner walls containing rows of seats surrounding a flat area for performances, are hardly susceptible

of architectural treatment in the ordinary sense. Very extraordinary reconstructions of some of these circus buildings have been made,[25] but the architectural effect must always have been slight, and must have needed the temporary decorations of banners and brilliant hangings and other festal decorations to have given it its full character.

310—Amphitheatre at Arles (Bouches-du-Rhône). (From photo.)

The huge tombs of the empire are a strong survival of early and semi-barbaric forms. The private memorials shown in Figs. 283 and 300 are of a very different character—they are elaborate structures in mortar-masonry, though of different architectural types. But in Rome itself, on the Campus Martius, the first emperor who had undertaken the task of making of Rome a splendid architectural city, began his own family tomb as soon as his power was assured—and this tomb was a grass-grown, tree-planted tumulus. It was 225 feet in diameter, as Strabo tells us, and it had a basement wall of marble; but from this arose the earthen or earth-covered cone, surmounted by a statue of the emperor. The Indian stupa is exactly the same thing in its origin, and so are the primitive tombs of the Etruscans;

[25] Especially by Simil, in continuation of Letarouilly's great work on the Vatican.

and Mr. Lanciani[26] states that "Augustus made the type popular among the Romans, as is proved by the large number of tumuli which date from his age, on the Via Salaria, the Via Labicana, and the Via Appia." Great masses of ruin are all that remain of the foundation-walls of masonry.

The arrangement of the burial chambers in a great imperial mausoleum did not differ essentially from that seen in any *columbarium*[27] of the many which have been discovered in the Campagna. There is always a system of niches, each three or four feet high and wide, and deep enough to receive an urn with the ashes of the dead, a portrait bust, or a memorial casket. At Palmyra there was a building on a larger scale. The receptacles for the dead are long enough to receive a coffin, and the building itself is designed like a short, broad temple with a hexastyle colonnade of considerable architectural merit. There are columbaria of the more usual kind on the hills above the city of Palmyra, and they attract great attention from their tower-like form and somewhat imposing mass. One of them is 75 feet high as it stands, and has lost its pyramidal roof.

[26] Pagan and Christian Rome, by Rodolfo Lanciani, Boston, 1893.

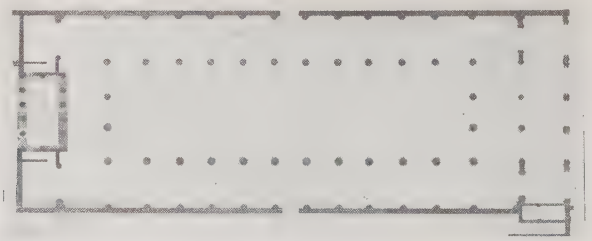
[27] Columbarium: in Latin, a pigeon-house; hence a single niche or recess in which a burial urn or the like might be placed for permanent keeping, sometimes by sinking the actual urn with the ashes beneath its floor, while a bust or other memorial was left in sight. Especially, in modern use, a chamber, often subterranean, the walls of which are opened into such niches. A few of these chambers are above ground, in upright buildings of some pretension.

Bronze rhyton, from Pompeii, in the museum at Naples. (From photo.)

CHAPTER VI

THE PLAN AND DISPOSITION OF SMALLER AND PRIVATE BUILDINGS

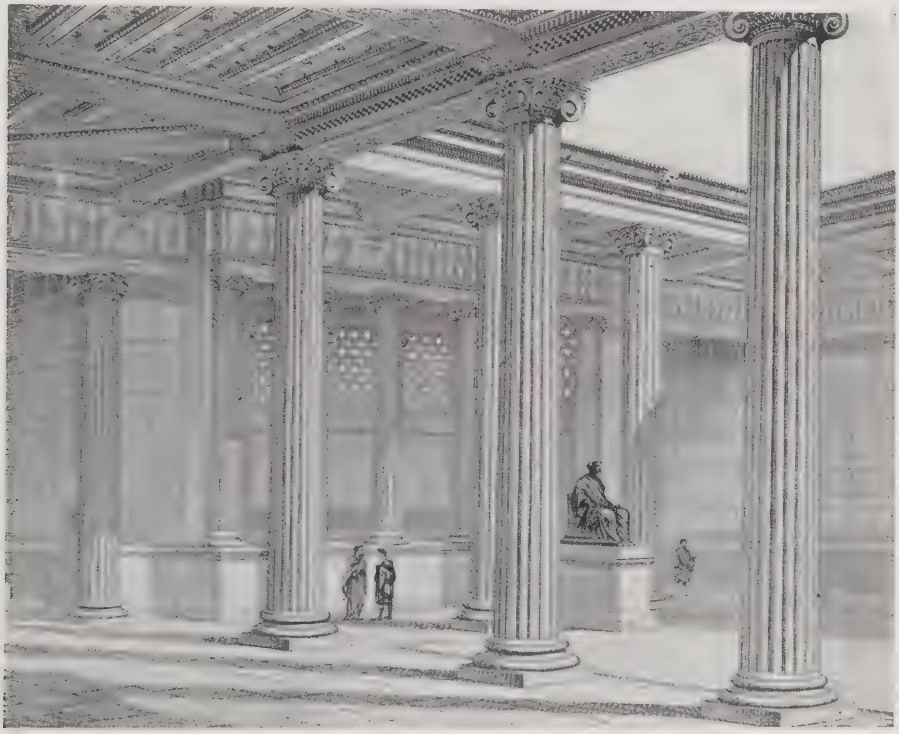
PUBLIC edifices in their general arrangement have been considered in Chapter V; we have now to note some characteristics of the minor architectural works of the Romans. Take for instance the smaller basilicas; they are sometimes singularly non-classical in their general appearance, as being simply large halls with many windows: and, again, they are interesting specimens of columnar architecture. One of the latter class is the basilica at Pompeii. Fig. 311 gives the plan of this building, in which it should be noted that the tribunal is at the southwest end, the entrance at the northeast end where it opens into the forum. The stumps of the columns are in place, from 4 to 7 feet high, the walls and the engaged columns pre-



311—Basilica at Pompeii, plan. Length about 211 feet over all.

served to a height of 15 feet in some places, and the columns of the tribunal (at the end opposite the entrance porch) higher still. The columns are built of small bricks, except those of the portico which are of tufa. The stair seen in the lower right-hand corner has nothing to do with the basilica—it led to some upper colonnade of the forum. The narrow parallel lines near the middle columns, on the southeast side, indicate a drain in the brick floor, which opens into

a number of catch-basins. Because of these, chiefly, the conjectural restorations of a few years back showed the interior as unroofed in the middle (see Fig. 312); but the balance of recent opinion is for a complete roof, probably a flat ceiling hung from timber-framed trusses. The reader may imagine a panelled ceiling filling the open well-hole in Fig. 312, and this would not change the design very much,



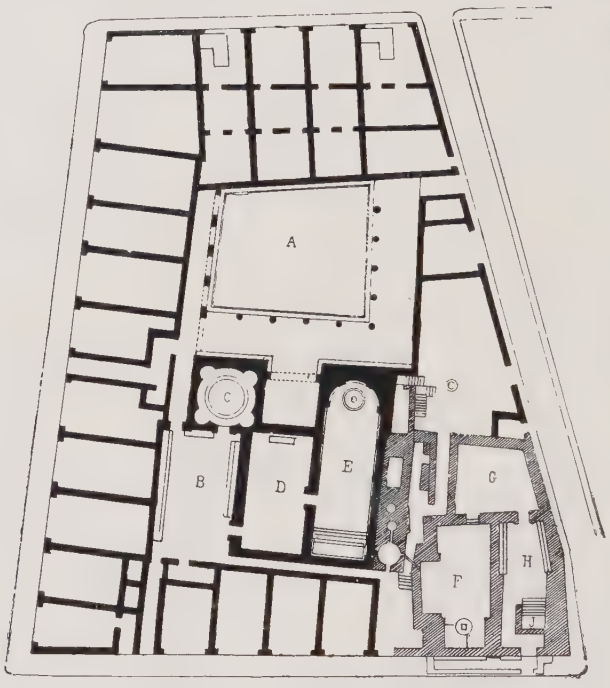
312—Basilica of Pompeii, interior as restored. (Viollet-le-Duc's restoration.)

for the ceiling in question would have to be set some feet higher than those of the aisles.

We are to consider these basilicas as enclosed and sheltered additions to the fora. The same business which would be carried on out of doors would be admissible in the basilica, buying and selling, the meeting of persons having business to discuss, consultation of lawyers, etc.—with only such reserves, perhaps, as the barring out from the covered building of actual markets of meat and fish. The essential fact about the basilica was the presence of the tribunal of justice, which was often (as in the Basilica Ulpia, Fig. 306) a hemicycle. What means were used to screen off the court-room from the market-place,

we can only guess. The student is reminded of the well-known use of cathedrals in the later Middle Ages, when the nave and the nave-aisles would serve for a hundred secular uses, when the gangway across, from north door to south door, was as free as the streets (as indeed it has been even in our own time), and when the choir and sanctuary alone were kept sacred for divine service.

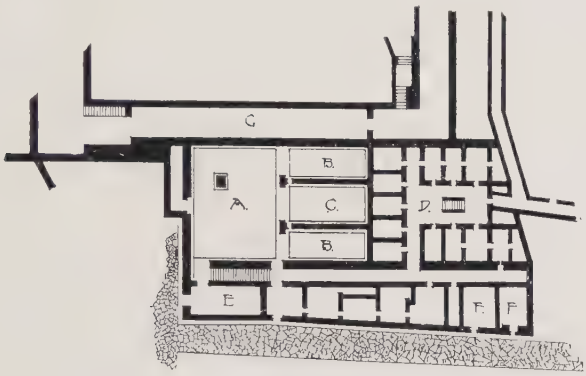
Fig. 313 is a plan of a thermal establishment in Pompeii, in which



313—Plan of thermæ near the forum, Pompeii. (From Mau.)

A is the peristyle leading to the men's baths, *B* the Apodyterium or dressing room, *C* a room with round basin, thought to be the cold bath (Frigidarium), *D* the warm bath (Tepidarium) and *E* the hot bath (Caldarium). *F*, *G* and *H* are the Caldarium, the Tepidarium and the Apodyterium of the women's baths, and *J* is a small basin for cold bathing. These halls open into an outer court, which opens into the street. All the other rooms opening on the street are thought to be shops having no connection with the thermæ. Such a building might have very interesting interior effects, and rooms of this and other baths are shown in Chapter VII; but we can hardly compare the planning of buildings in a south Italian town under the Roman Empire

with the planning of any period since the exteriors, even of modest dwelling-houses, came to be considered of importance, as in Europe in the twelfth century. The stateliest dwelling in Pompeii had nothing that we should call an exterior, architecturally speaking; nor even a façade more important than a row of small shops with their humble upper stories (pergulæ), or blank tufa walls without openings or with here and there a square trap. In these, as in the forum of Trajan and its dependencies, one enters before he looks about him; and this plainness of the street views must have given a peculiar setting in



314—Ground plan of house on the Palatine Hill. A, atrium; BB, alæ; C, tablinum; D, stairs to upper stories, nearly destroyed; E, triclinium (eating room); FF, probably shops; G, cryptoporticus or covered street from which the atrium was entered; the outer doorway shown, by error, as closed up. (Drawn by E. P. C. from *Forma Urbis Romæ*.)

the way of complete contrast to the occasional temple without an enclosing peristyle, or the triumphal arch built across the road.

The Roman dwelling-house was primarily a court with smaller rooms around it, all in the ground story. In the dwellings of early and very simple times, the court, the *atrium*, was the whole house, except for minor offices. This is where the hearth and the fire for cooking and warmth were kept, and where domestic worship had its centre. The use of the word "atrium" as equivalent to house or dwelling is preserved in such terms as *Atrium Vestæ*, the common name of the elaborate building in the Roman forum, the home of the vestal virgins, including dwellings, shrines and rooms of ceremony.[28]

[28] The treatment of the subject in Pauly-Wissowa, s. v. Atrium, and in Smith's Dictionary of Antiquities, s. v. Domus, is satisfactory. The long article s. v. Atrium in Daremberg and Saglio, deals with the atrium of the later house in a very intelligent way.

Fig. 314 is a plan of a dwelling on the Palatine Hill, called the house of Germanicus. The ground story only remains, and this is placed low, with higher buildings about it and having its principal entrance upon a cryptoporticus (a covered gallery), *G*. The plan is taken from the great atlas by Lanciani, *Forma Urbis Romæ*, referred to elsewhere. This, however, is an exceptional plan—a building of the empire, built upon that special, reserved ground which already in the time of Augustus was marked out, it appears, for the home of the Imperial family and the highest personages of the empire. We are to consider this dwelling as having but little individuality, as being almost an appendage to the larger structures near. The dwelling-house of the town outside of the Palatine Hill would have a more fixed outline, would occupy its own definite plot of ground more plainly, and it would be only one story high, with a loft here and there, in place of the three stories which probably existed in the case of the Palatine dwelling. That house of the town was, then, very like to the Roman dwelling of earlier times described in Book IV. The walls are still of unfired brick. The surfaces of the walls are plastered, protected from the weather by stucco, *cæmentum*; and, in the time of the later republic and the empire, this material was of a fineness and durability unknown in modern practice. This material was freely used for ornamental work inside the house. Here there was no architectural front, no façade. At most, and in the time of the empire, a few houses had columns to adorn the entrance doorway; and in villas beyond the walls, a colonnade might form an outer vestibule. The court was sometimes roofed over, and Etruscan representations seem to suggest a solid roof with very small central opening, in certain cases. The familiar name *atrium* (probably from *ater*, "black and smoky," as from the kitchen fire) is thought by many archæologists to denote a roofed court.[29] On the other hand, it was very commonly open in the middle, with roofs like those of verandas on all four sides, and an opening (compluvium) in the middle. The roof sloped toward this *compluvium*, and the rain dripped into the *impluvium* or cistern. Vitruvius (VI, 3) says that when the four roofs were carried on girders, needing no posts to support them, the term Tuscan Cavædium was used; that the Corinthian Cavædium had columns to support the plates at the eaves, and that the form with only four such columns at the four

[29] Lewis & Short's valuable Latin-English Dictionary says plainly that the atrium was always covered; but this is probably an etymological point.

corners was called Tetrastyle. There was also the form with roofs sloping the other way and throwing the rain-water toward metal gutters: which plan Vitruvius says is bad because such houses are always getting out of order. This we can readily understand, as the gutters of wood or metal or metal-lined wood would leak after a very slight blow, or in consequence of natural settlement of the walls or shrinkage of the roof timbers, and because the unfired brick wall would be soon destroyed by trickling water.

The house at Pompeii known as the House of the Tragic Poet

315—Plan of House of the Tragic Poet, Pompeii. (From Mau.)

was uncovered about 1840, and is one of the most important examples of a residence of Roman time—after the conquest of Campania, but not earlier than the time of Tiberius. It is simple and of no great extent; see Fig. 315. The atrium, 3, is of the Tuscan sort, that is, there are no columns, but girders to carry the roof, as explained above. Opening from the atrium on the left are stairways leading to the upper floor, and the rooms which they served probably extended as far as from the wall of the shop to the wall between the tablinum and the peristyle. The shops, 2, in most cases, had their own upper story. The old and generally familiar arrangement of rooms known to archæologists as the tablinum, the alæ, etc., is given in 8 and 7; the ala on the left as you enter having been taken up for use as a store-room or the like. The room considered as a dining-room and in which the triclinium was set up is that marked 15; it is about twenty feet square and opens into the peristyle, 10.[30]

[30] Peristyle: in the arrangement of a dwelling-house an open space, usually a garden, surrounded by a colonnade, often on every side; but in the smaller peristyles as in the

Such houses have little architectural effect in their construction; when their decorations are destroyed or seriously marred they cannot have much dignity nor much grace of proportion. Their ruins are not impressive. And yet the colonnades in the peristyles of some of the houses of Pompeii and Herculaneum are full of interest, because they supply us with almost our only opportunity of seeing how the Romans of a good period (40–80 A.D.) treated their own well-known

316—Peristyle of house in Herculaneum, called House of Argus. (From photo.)

style in simple domestic buildings. Thus in Herculaneum the house of Argus, so called, offers the garden colonnade seen in Fig. 316. In Pompeii, the House of the Tragic Poet offers what was once the atrium and the tablinum, in the view given in Fig. 317. The columns are those of the peristyle, which is very small in this house, as shown in Fig. 315, not exceeding 35 feet square within the columns, but with

present instance, on three sides only. The term relates to the colonnade itself, but the open space known by this name in domestic architecture is to be taken as an enlargement of the atrium, a development through greater riches and display, until the old sitting-room had become a somewhat magnificent garden with fountains and flowering plants. In some of the Pompeian houses there is another garden which is not surrounded so closely by the buildings of the house (see also the villa of Herculaneum below).

317—House at Pompeii, called that of the Tragic Poet. (From photo.)

318—House at Pompeii, called that of Meleager. (From photo.)

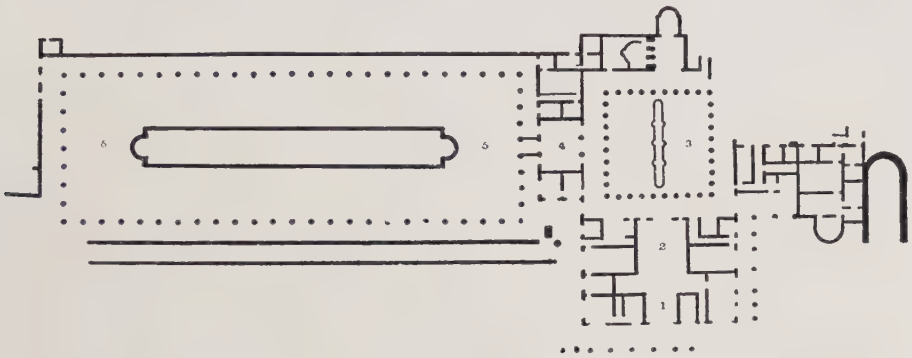
the added width of the roofed space which surrounds this open garden. Our view is from the atrium; the first step seen leads up to the floor of the tablinum, the mosaic floor of which is in the middle distance. The circular object in the extreme foreground is the family altar, which was set close on the edge of the impluvium—the cistern—which is not seen in the picture. The columns, of which the capital is made up

319—Interior of so-called House of Ariadne, Pompeii. (From photo.)

of a mere ring, a coronal as it were, with slight ornaments upon it, and carrying a moulded abacus higher than the coronal itself, are very interesting, and offer one among a hundred different forms which the Roman Doric capital might suggest. A still richer capital of the same type is seen in the house of Meleager (Fig. 318). Again, there are some houses, in which the column is a plain cylinder, or having so slightly conical a form that it is only by comparing two of the shafts that the divergence from a cylinder is visible, and these simple columns have often a mere ring of moulding to serve as a capital. On the other hand the large house, sometimes called the House of Ariadne, has a

peristyle with sixteen columns, very beautifully tapered, fluted from a height of about 5 feet, and finished with capitals of that strange Romanized Ionic in which four volutes roll out from the four corners of the abacus, as if to support them (see Fig. 319).

The famous villa at Herculaneum, from which were taken many papyrus manuscripts, and also many of the splendid bronze statues



320—Plan of building at Herculaneum called the Villa of the Papyri. Redrawn from the plan given in "La Villa Ercolanese." 1, vestibule; 2, atrium; 3, peristyle; 4, tablinum; 5, garden or greater peristyle. (Courtesy of Charles Scribner's Sons.)

which now adorn the National Museum at Naples, is only known to us by the explorations carried on 30 feet below the surface, by those who dug and cut tunnels through the soft rock in order to extract portable works of art. The plan of it as made up from these explorations is, however, intelligible enough, and, as furnished by Comparetti and De Petra,[31] is given in Fig. 320. That house was one of a very wealthy patron of arts. His statuary, and the numerous portrait busts, admirable Greek sculpture, found under the roof of his peristyle, make the chief glory of the National Museum at Naples. What paintings the house may contain is not yet known. The garden was about 100 by 300 feet, with the colonnade of the peristyle fronting upon it on every side, and a very large tank, long and narrow, in the middle, but this not serving as an impluvium, for it was much smaller than the open space within the roofs. It is evident that so large a garden might be filled with grass and flower-beds and gravel walks, and that the rain might drip from the narrow roofs upon this surface, while the tank in the middle supplied still, clear water, and perhaps allowed of the cultivation of water-plants. As for the house itself, there are many unanswered questions about it, but it is quite evident which is the

[31] La Villa Ercolanese, by Domenico Comparetti and Giulio de Petra, Turin, 1883.

principal entrance and how that entrance opens on an exterior colonnade —a thing hardly practicable in a crowded town, and suggesting the tradition of the location of this villa in a somewhat retired place. The atrium leads directly to a smaller peristyle about 60 feet square within the columns. It is greatly to be regretted that we have no notion at all of the architectural treatment of this great villa.

Tripod table of marble, from Pompeii, in the museum at Naples. (From photo.)

CHAPTER VII

SURFACE DECORATION

IN a nation of builders like the Greeks, like the French of the twelfth century, like the Persians of the fourth century B.C., as far as we can judge of them, there comes into being a method of adornment which it is natural to apply to buildings of all kinds. It is inevitable, because suggested by and growing out of the structure. The Greek, indeed, painted his building in brilliant colours; and, so far as that goes, the ornamentation was applied to the finished work, and after perhaps no serious thought of the colours and their application previous to the completion of the stone building. The mediæval man put in his windows of brilliant glass, and painted his wall either with conventional patterns or with pictorial designs: and these adornments also were non-constructional. The Persian developed at an early day a wonderful taste for painting surfaces of pottery and encrusting his wall with them. But this in no way prevented the growth in those lands of a decoration which could not have been applied except with the peculiar style of building adopted. This decoration, among the Greeks, was a constant restating of the real conditions of their masonry structure. Among the Persians and their successors, fantastical experiments in that building with hard brick and strong mortar, which they seem to have invented, made an architecture at once durable and ornamental, which it is hard to match elsewhere. The mediæval architecture was the culmination of daring constructional work reflected in the minor parts of the building, in such a way that almost every stone of the exterior and interior alike bore perfectly unmistakable marks of the kind of building to which it belonged, and of the part that it had to play in that building. Then when sculpture was added in Greece and in the north, it filled a definite place in a definite way, and was inevitable in a sense, coming directly from the instinct to

carve those stones which were so carefully shaped and prepared to be set up in the building.

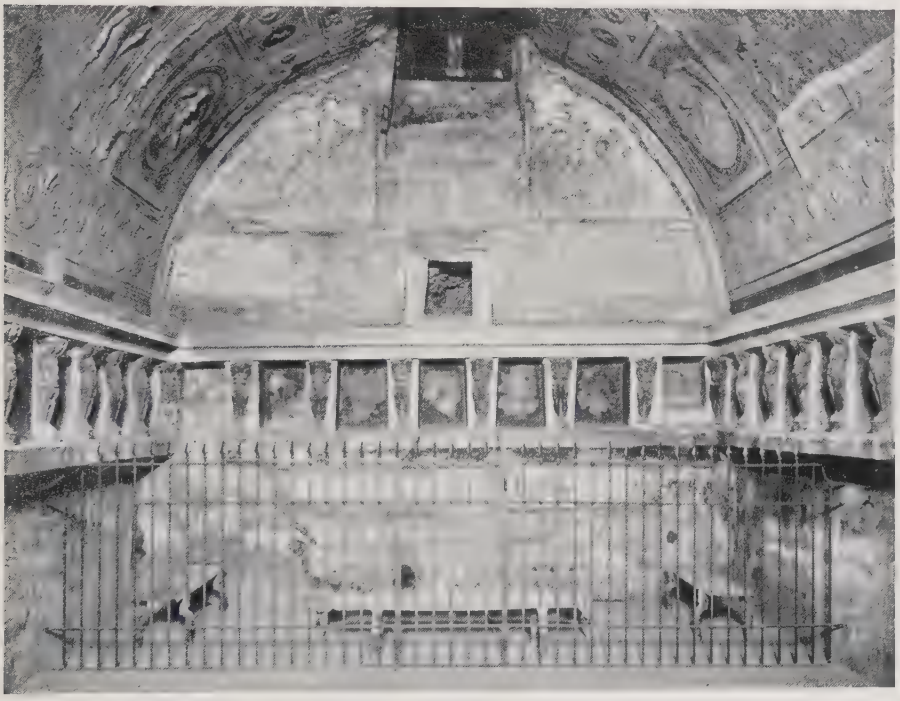
Very much the same conclusion will be formed by one who studies Egyptian art. The sculpture of walls and pillars, that wonderful cœlanaglyphic relief, could never have been devised otherwise than for the surfaces of the sloping walls of the pylon and propylon and the slowly rounding surfaces of the huge columns, and even the elaborate conventional patterns in brilliant colours painted on flat ceilings were the immediate result of the sculptured patterns, those incised lines and curves which had originated when men with blunt copper tools were face to face with huge slabs of stone, and felt the need of a surface adornment for them.

The distinctions are subtle and yet they are clear enough. They can be better seen by contrasting them with the conditions under which the Roman did his decorative work. Large surfaces of interior walls were faced with materials applied after the building was complete in other respects. Marble was used in thin slabs, secured to walls by clamps and cement. This was often treated with slightly projecting mouldings, so as to produce that effect of panelling which is dear to modern decorators. The marbles used for these wall-facings were often of extraordinary beauty and were brought from Africa, from Greece, from the Pyrenees: some of the old quarries are known and worked in modern times; but no people since the imperial time has ever employed that splendid adornment with any freedom. The only apparent exception is in Rome itself, where altar fronts, pulpits, and *ambones*, and wall-facings of the churches were taken bodily from ancient buildings all through the Middle Ages and the years following. Besides what was used in this way, it is certain that vast quantities were burned into lime for mortar.

At Rome, indeed, there was a special quay of the Tiber known as the marble depot (Marmorium), and we see reason to believe that the imperial city itself was the seat of this marble decoration, almost to the exclusion of the provinces. The stucco decorations at Pompeii, described below, had they been in Rome, would have been combined with dadoes of splendid marble, and those rooms in Rome whose wall-faces have been partly preserved, show the traces of the attachment and the wrenching away of the marble slabs.

Fig. 321 is one of the halls of that thermal establishment in Pompeii which is shown in Fig. 313 (Baths of the Forum, at Pompeii). It is

the upper end of the room marked *D*. Here are seen decorations of both kinds. There is constructional decoration in the strange little telamones which carry the entablature, for, though the building might have been as solid without them, there has been deliberately chosen the scheme of building by which the wall is partly carried by these small uprights. Then above and covering the vault is a decoration in that magnificent hard and durable stucco of which the Romans had the

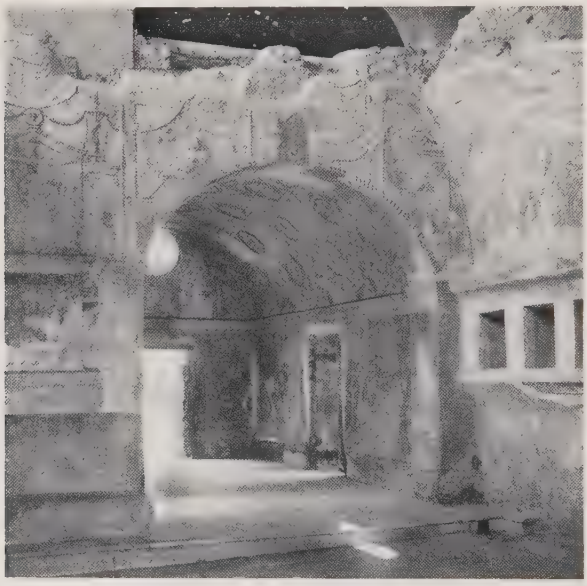


321—Hall in public baths near the Forum, Pompeii. (From photo.)

secret, figures, flowers, and scrolls in relief; and these relief patterns, whether painted and gilded or not, are absolutely unconnected with the building and are applied, as it were, by an afterthought. There is a barrel vault of solid masonry, which a Greek would have painted in vivid colours, and with very conventional patterns, either upon the stone itself (if smooth and hard) or upon a thin stucco coating, a mere film. It might have been painted directly upon the stone in big, bold patterns, ignoring the visible joints, and with some reference to religious emblemata, as was often done in the European Middle Ages. It might have been covered with such sunken reliefs as those of the Egyptian walls, and that would have been a perfectly natural thing to do, but that

Europe seems never to have accepted this particular form of sculpture. It might have been covered with wall paper, as would have happened in America in the nineteenth century. What was done was the direct result, on the one hand, of the possession of a plastering better than any known to modern times,[32] and on the other hand, a familiarity with the fine forms suggested by Greek art of earlier times and allowing of unlimited adaptation and application.

These Roman stuccoes are so marvellous that it is worthy of a



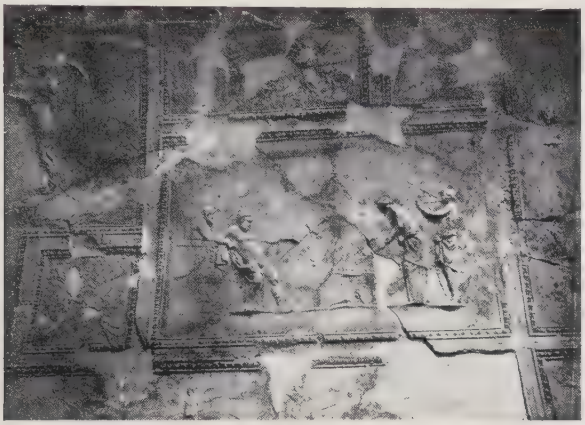
322—Vestibule and great hall of Stabian Baths, Pompeii. (From photo.)

special study to examine, date, and classify them. They have not been much noticed, because we have accepted ancient Greco-Roman art in an awestruck way, calling it "classical" with special emphasis, and then counting nothing as classical except the big exterior colonnades; and that which has brought the surface adornments to the front, now, and has given them a hold on the modern student's imagination, is the discovery of certain tombal and other chambers in and near the imperial city itself. The result has been the publication of a valuable book devoted entirely to the vault decoration of the Romans, of which decoration the greater part is in this plastic material. The illustrations

[32] Toward the close of the nineteenth century some interior decoration was done in fine hydraulic cement applied directly to the brick wall; and this process would be capable of any development: but it seems to have been kept to mere groups of mouldings.

given in this chapter are made from photographs which were for sale in Italy twenty years ago, and yet until within a very short time serious study seems not to have been given to the subject.

Another room in the same thermæ, that one which is numbered



323—Stucco decorations, vault of house in Rome on the right bank of the Tiber. (From photo.)

E on the plan, Fig. 313, is adorned with mere flutings and reedings; the semicircular vault divided by projecting ribs in alternate concave and convex mouldings.

In the Stabian Baths, the best-known thermæ of the long-buried

324—Stucco relief from house near the Tiber discovered in 1879. (From photo.)

city, are the hall and the vestibule shown in Fig. 322. Here the two barrel vaults which are visible has each its own pattern of panels with mouldings in relief, and relief ornamentation within them. The panels of the large hall in which we stand are octagons, alternating

with squares, the squares having a mere fret or meander which takes the shape, strangely enough, of the supposedly mysterious fylfot or swastika, and those of the vestibule, circles alternating with many-pointed star shaped figures. Then the vertical wall directly facing us, that above the vestibule roof as well as that on the left, is covered with a somewhat elaborate design, figures in large square panels which

325—Reliefs in stucco, tomb in the Campagna of Rome. (From photo.)

are treated so as to suggest architectural forms. The full significance of such square panels is better seen in Fig. 323, from a house which was uncovered in 1879, when the straightening of the Tiber banks within the city of Rome and the building of stone retaining walls was under way. In this the large panel shows a Bacchic ceremonial in full swing; old Silenus, leaning on his arm and half seated on what might be an altar, swings his thyrsus adorned with fillets; three bacchanalian devotees are seen, one of whom blows the double pipes. A splendid winged figure like an angel of Christian theology, on the left, is probably Sleep (Hypnos).

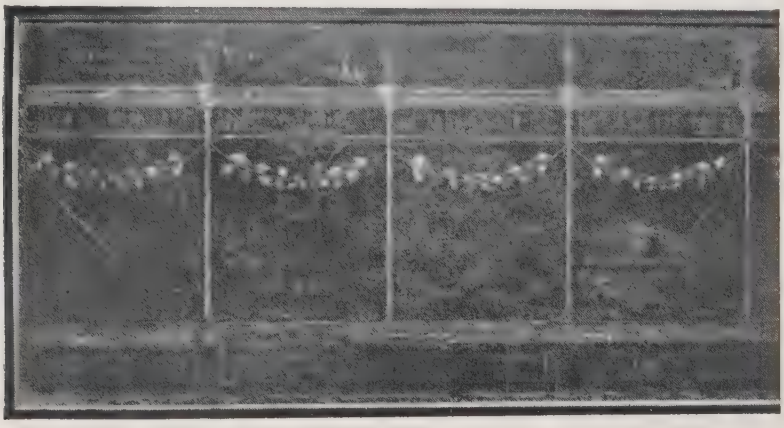
Fig. 324 shows a much broken relief which, however, is worth study on account of the surprising excellence of the modelling and the artistic conception—it is sculpture worthy of the Augustan age, indeed.

Finally, Fig. 325 shows a part of the interior of a tomb on the Via Latina, the end of a larger hall and the opening into a smaller one, so that two vaulted roofs are seen in steep perspective, and a piece of the tympanum beneath the larger vault is shown flat and distinctly. The vaults here were adorned, the smaller one, dimly seen in the cut, with squares arranged in a well-known pattern, the larger vault with great circles filled each by a group of figures in action, and these alternating with smaller squares treated with simpler ornamentation.

326—Mural painting, part of large painted wall in private house on right bank of Tiber, Rome. (From photo.)

If the stucco reliefs are less well known than they should be, on the other hand the paintings of walls and ceilings have become so very familiar to the frequenters of museums and the habitués of the libraries that even new discoveries which are made from time to time give but little fresh information. The curious questions raised by some of them are continually brought up afresh for consideration in the light of new discoveries. It has been argued that the common representation of light and slight framework with uprights and horizontals of extreme tenuity, such as are frequent in Pompeii, implies the existence in the imperial time of an architectural system founded upon metal—perhaps a bronze framework used for interior partitions and the like, the open spaces filled with hanging panels of textile fabric; or merely showing a solid wall beyond. The imitation of very light construction, in balconies, canopies, and loggie of the slenderest framing, is carried very far. It seems a sufficient explanation to assume

that the same artist who was concerned with the figure subjects which fill some of the panels, occupied his thoughts also with the devising of a very complicated system of lines which should enclose those figures; and as he could not always resort to scrolls, the question of putting straight lines together with ornamental bosses where they meet would occur to any such artist reproducing in cheaper form the stately designs of a former age. And so with the paintings of mythological and



327.—Painted wall in house near Tiber. (From photo.)

fanciful subject, landscape with figures or the like. The museum of Naples has many of these which have been carefully cut from the walls of Pompeii, and others remain in their original location, protected as best may be by temporary roofs and by doors that may be locked. Fig. 326 is a wall in one of those houses on the river bank at Rome, of which mention has been made. The painting in the middle is assumed to be the education of Bacchus by the nymphs who took charge of his early existence, and the slender columns carrying an entablature and pediment which form together the frame of this picture, are something in the line of those metallic suggestions mentioned above. These proportions are certainly more slender than anything that a Roman would have built of marble, except as a frame to a picture and that made fast to the wall.

Fig. 327 is a most effective piece of simple decoration, the adornment for a wall above a stone dado, and as cheap to produce in a city full of really skilled artificers as the feeble imitations of marble and wood with which American houses were disfigured in times that we all remember.

The mosaic floors of the Romans are famous enough. We are not without our own modern notions of how such work as that should be done, but those notions come to us from the third century, and from the Roman designs in the main. Fig. 328 is a small detail of a floor in the upper story of the thermæ of Caracalla, the mosaic being laid directly on a cement surface filled in upon one of the great vaults below. This ornamental figure, a Cupid riding upon a dolphin, is given on a scale large enough to show fairly well how the tesseræ are set. It is a curious study in conventional draughtsmanship, this drawing of the lines necessary in the modelling of a nude figure, with material and with workmanship as impracticable—as hard to manage—as those broken curves made by the tesseræ.

When mosaic was used for wall decorations, it had to vie with painting done with brush and liquid colour—it had to be made up of very small tesseræ and laid with thin lines, delicate curves, minute groups of changing hues. No attempt was made to disguise the fact that the work was in mosaic; no doubt it was a more costly seeming, a more elegant method of decoration than decorative mural painting of the more usual sort; but it had to be done delicately.

328—Mosaic from floor of upper story, thermæ of Caracalla, Rome. (From photo.)

Fig. 329 is a wall picture in the National Museum at Naples, but cut from a wall in Pompeii. It represents a scene of popular comedy; and it is curious to note how frankly the necessary gradations and transitions of light and shade are undertaken by the mosaicist. He seems to know that the students of his work will not hold him to an account as strict as if he were a painter with the brush, and he draws a curve and heightens the rounding of a fold of drapery by means of lines of light and dark gray tesseræ in a fashion that the twentieth-century artist would avoid. The modern world is not so accustomed to decoration as to accept for its sake what seems imperfect in drawing or unelaborate in light and shade.

Fig. 330 is one of those very curious mosaics in relief, the an-

tiquity of which has been disputed by some writers, though the reasons for such a theory are hard to understand. It is hard to see what motive would have impelled the modern artist of sufficient ability to undertake so elaborate a deception: and how these pieces could have got into the Naples Museum as coming from Pompeii. There are several such panels in that museum; and in each case the stuccoed surface of the wall has been modelled up into relief, as in this instance, and then the surface of the relief set thick with these tesseræ of stone or glass, before the cement has hardened. Unlimited variety might be secured

329—Wall mosaic from Pompeii; National Museum, Naples. (From photo.)

in this direction, but large compositions produced in this way do not seem to exist.

Wall decoration in the more usual sense is well exemplified by Fig. 331, the mosaic-lined niche for a fountain in a Pompeian dwelling. A small marble basin, nearly semicircular in form, received the water of a jet which rose within the niche. All the surfaces, that of the niche proper and that of the projecting pieces of wall with arch and pediment, are wrought in this very fine and minute mosaic with tesseræ of many sizes and of an almost indefinite number of colours; and then, to add sparkle and lustre, to give a sea-side and a salt-water look to the composition, scallop shells are inlaid, projecting by their full rounded surface along the outer edges of the structure itself and the niche, as well as in at least two bands across the back of the niche. Then sea shells of a wholly different form and of contrasting appearance, lines of spiral shells with their mouths set outermost, are ar-

ranged in horizontal bands across the niche and above the niche. The gable is adorned with very small scallop shells alternating with larger spiral shells.

Of all Roman surface decoration the most perfect is figure sculpture in relief. There has been comment upon the independent value and great relative importance of the relief sculpture of the Greeks, and yet it could not be said that this sculpture was superior to the statuary of the same epoch. But with the Romans the conditions are different. Statues of unmistakable Roman origin, of Roman subject, of Roman artistic inspiration, are relatively few so far as our knowledge goes, whereas the sculpture in low relief and in higher relief, prepared for memorial arches and for the walls of temples and temple enclosures, is of unmeasured quantity and as yet of unestimated variety and intellectual interest. It is within a few years only that the Augustan art has been studied to the full. We owe much in this matter to the Austrian, Franz Wickhoff, whose prefatory chapter, prepared for the publication by the great Austrian annual [33] of a wonderful manuscript, set the pace for later students of this development of art. This prefatory treatise has been translated into English, and the translation published in a quarto volume—Roman Art: Some of Its Principles, etc. London, MCM.

330—Mosaic in relief, small panel from Pompeii, in the National Museum at Naples. (From photo.)

The most remarkable relief sculptures of purely Roman design

[33] Jahrbuch der Kunstsammlungen des allerhöchsten Kaiserhauses: Die Wiener Genesis herausgegeben von Wilhelm Ritter von Härtel und Franz Wickhoff.

are associated, as we now think, with the great monument erected in the reign of Augustus in Rome, named the Altar of Peace. It was intended as a memorial of that important period in the history of the European world when, at the close of civil strife, about 30 B.C., the world of the Mediterranean found itself, for the first time in many centuries, at peace. It could not be foreseen how the unsystematized

331—Wall-niche with fountain with mosaic and inlay of shells. Pompeii. (From photo.)

government of the empire, without provision for succession or for choice of the master of the world, would bring on other wars as disastrous and more widely influential than the wars of what was then antiquity. Thoughtful people of the provinces, as well as of Italy, were justified in thinking that a new and better world had been called into existence. The structure which was built to commemorate this event is known to us only by its fragments. There are reliefs in the city of Rome, at the Villa Medici, where the French Academy has its

seat, and at the Museum of the Thermæ situated in the old baths of Diocletian. Very many slabs are in the Uffizi Museum at Florence: there are several pieces in Vienna and one at the Louvre.[34] These have been so much and so carefully studied that special students, putting together what little documentary evidence there is and applying this to the marbles known to exist, reach the conclusion that a square of 35 feet was enclosed by a stout wall of marble about 15 feet high, having two wide doors on opposite sides; that steps went up to these doors, and that steps within the wall led again to a platform about 15 feet square upon which was a small cubical altar. The walls, then, perhaps both inside and out, were set with pilasters at the corners and at the doorways, and between these pilasters the whole surface was sculptured. A broad dado was filled with scroll-work, and above this, starting therefore at the height of 10 feet from the pavement out-

332—Bas-relief, probably of the destroyed altar of the Roman Peace, now in the Uffizi Museum, Florence. (From Petersen, "Ara Pacis Augustæ.")

side, a band of figure sculpture was carried round the whole extent of the wall. Of this bas-relief there was at least 100 running feet, and the figures are about life size, the scene represented seeming to be a meeting of the whole imperial family, all the relatives and dependents of the Dictator Julius and his nephew, Octavianus Augustus, com-

[34] See the work printed as an extra publication of the Austrian Archæological Institute, Ara Pacis Augustæ, by Eugen Petersen, Vienna, 1902.

333—Large sculptured panel of destroyed arch of Marcus Aurelius, now in Palazzo dei Conservatori, Rome. (From photo.)

334—Decorative relief sculpture in Lateran Museum. (From photo.)

ing, as it were, to a sacrifice. Fig. 332 gives one of the larger panels which remain.

The sculpture of the Romans at this time reached an approximate perfection, reminding us of Greek work of a good period; but there was soon a decline in the grace and in the subtlety of the design, which were lost in the attempt to get realistic records of Roman triumphs and Roman ceremonial. Throughout the reign of Trajan the great style prevailed, and sculptures from the arch and the forum of that great sovereign are almost worthy to compare with those of the Augustan period; but a century later and under the virtuous Antonines,

335—Central panel of frieze, in Lateran Museum. (From photo.)

such sculpture prevailed as that shown in Fig. 333. This and several other very large panels of alto-relief are put up in the Palazzo dei Conservatori, on the Capitol, and they are reputed to have formed part of the lost arch of Marcus Aurelius. The subject of our figure is the relief which shows the Emperor Marcus Aurelius in his four-horse chariot, in triumphal procession. The body of the car is adorned with reliefs of the great gods of Rome and of Victories supporting a shield: a winged Victory rides behind and above the emperor: two human figures are in the background, one blowing a long trumpet. In the distance are a temple clumsily drawn, with perhaps some attempt to show at once the tetrastyle front and a part of the flank, and an archway with the Roman order not well composed nor well represented.

The museums of Rome are full of slabs of relief sculpture, showing a more purely decorative purpose. Thus in the Lateran Museum, the pictorial-seeming bas-relief shown in Fig. 334 suggests at once a study from such Greek paintings as were imitated also on the house walls of Pompeii. The panel (Fig. 335) is just such a composition as would form the middle panel of a long frieze, such as that drawn across the principal front of a temple built during the time of Hadrian, and the upright panels forming evidently the shafts of certain pilasters (Fig. 336) are treated in a style so closely resembling that affected by the Italians of the Renaissance that one is surprised to find them among the unquestioned Roman remains of the Lateran. This, however, is to be remembered: that the arabesques of Raphael's loggie in the Vatican are confessedly studied from the paintings found in certain excavations under the baths of Titus, and that the very refinement of curve and the delicacy of relief which we fancy foreign to ancient Roman ideas of splendour are, after all, of imperial Roman origin. The reliefs of Fig. 336 are in no way inferior to the famous grottesche which revolutionized Italian surface decorations in the sixteenth century.

336—Two pilaster shafts in Lateran Museum. (From photo.)

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